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PROVINCE OF BRITISH COLUMBIA

FORTY-FIFTH AND FORTY-SIXTH
REPORTS

OF THE

PROVINCIAL BOARD OF HEALTH

FOR THE

YEARS ENDED DECEMBER 31ST,
1941 AND 1942



PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:

Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1943.

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PROVINCIAL BOARD OF HEALTH,
VICTORIA, B.C., January 15th, 1943.

*To His Honour W. C. WOODWARD,
Lieutenant-Governor of the Province of British Columbia.*

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present the Reports of the Provincial Board of Health for the years ended December 31st, 1941 and 1942.

G. S. PEARSON,
Provincial Secretary.

PROVINCIAL BOARD OF HEALTH,
VICTORIA, B.C., January 15th, 1943.

The Honourable Geo. S. Pearson,
Provincial Secretary, Victoria, B.C.

SIR,—I have the honour to submit the Forty-fifth and Forty-sixth Reports of the Provincial Board of Health for the years ended December 31st, 1941 and 1942.

I have the honour to be,

Sir,

Your obedient servant,

G. F. AMYOT, M.D., D.P.H.,
Provincial Health Officer.

THE PROVINCIAL BOARD OF HEALTH.


The Provincial Board of Health of British Columbia is The Lieutenant-Governor in Council, under the provisions of the "Public Health Act." For the year 1942 the members of the Provincial Board of Health were:—

The Hon. JOHN HART	-	-	-	-	<i>Premier, Minister of Finance, and President of the Executive Council.</i>
The Hon. G. S. PEARSON	-	-	-	-	<i>Provincial Secretary, Minister of Labour, and Commissioner of Fisheries.</i>
The Hon. R. L. MAITLAND	-	-	-	-	<i>Attorney-General.</i>
The Hon. A. WELLESLEY GRAY	-	-	-	-	<i>Minister of Lands and Minister of Municipal Affairs.</i>
The Hon. K. C. MACDONALD	-	-	-	-	<i>Minister of Agriculture.</i>
The Hon. E. C. CARSON	-	-	-	-	<i>Minister of Mines and Minister of Trade and Industry.</i>
The Hon. H. ANSCOMB	-	-	-	-	<i>Minister of Public Works and Minister of Railways.</i>
The Hon. H. G. T. PERRY	-	-	-	-	<i>Minister of Education.</i>

The Hon. G. S. Pearson, Provincial Secretary, acts as Minister of Health.

SENIOR PUBLIC HEALTH TECHNICAL STAFF.

G. F. AMYOT, M.D., D.P.H.	-	-	-	-	<i>Provincial Health Officer.</i>
J. S. CULL, B.A., M.D., D.P.H.	-	-	-	-	<i>Assistant Provincial Health Officer.</i>
Miss H. KILPATRICK, B.A., B.A.Sc., R.N.	-	-	-	-	<i>Director, Public Health Nursing.</i>
Miss M. BALDWIN, B.Sc. (H.Ec.)	-	-	-	-	<i>Consultant in Nutrition.</i>
R. BOWERING, B.Sc. (C.E.), M.A.Sc.	-	-	-	-	<i>Public Health Engineer and Chief Sanitary Inspector.</i>
C. E. DOLMAN, M.B., B.S., D.P.H., Ph.D.	-	-	-	-	<i>Director, Division of Laboratories.</i>
J. D. B. SCOTT, B.A., B.Com.	-	-	-	-	<i>Director, Division of Vital Statistics.</i>
W. H. HATFIELD, M.D.	-	-	-	-	<i>Director, Division of Tuberculosis Control.</i>
D. H. WILLIAMS, B.Sc., M.D., M.Sc.	-	-	-	-	<i>Director, Division of Venereal Disease Control (on Active Service).</i>
D. E. H. CLEVELAND, M.D.	-	-	-	-	<i>Acting Director, Division of Venereal Disease Control.</i>



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REPORT *of the* PROVINCIAL BOARD OF HEALTH

YEAR ENDED DECEMBER 31st, 1942.

INTRODUCTION.

This, the forty-sixth annual report of the Provincial Board of Health for the year ended December 31st, 1942, has been published early in 1943 because of plans formulated during the year 1942 and the full-hearted co-operation of the various senior officials of the Provincial Health Services. It is gratifying to be able to present this Report at a time when it should be of greater interest to the people of the Province.

The year 1942 has been very trying because of the increased demands made on the Public Health facilities and the continuing shortage of technically trained personnel.

Many trained personnel have joined the Armed Forces. The inability to procure other trained personnel to take their places has necessitated reorganizing many of the programmes and, in some cases, curtailing certain phases of public-health activities. In other instances it has been possible to reallocate many of the duties of those leaving among the remaining staff.

The same problems experienced on a Provincial level are also found in relation to local Health Services. Where, in the past, areas have been served by part-time physicians acting as Medical Health Officers, these physicians are having increasing difficulties as often impossible demands are made on their curative services. They, therefore, have little time to devote to the necessary Health Services of their community. To offset this difficulty many municipalities are requesting the formation of Health Units with full-time trained public-health staffs. Unfortunately, because of the shortage of trained public-health personnel it is impossible to meet in this manner the local public-health problems and relieve the part-time Medical Health Officer of some of his load. However, the Public Health Nurses are undertaking new duties, and have extended their programme considerably. This has often meant curtailing other less essential parts. The Public Health Nurses perform a service for their country on the home front that is worthy of special mention and for which they deserve a great deal of credit and appreciation.

In spite of these difficulties it has been possible, because of a willingness and whole-hearted co-operation on the part of most members of the staff, to meet the most urgent demands and at the same time extend the programme to meet new problems. Rigid economy has been practised and this policy alone has made it possible to expand the programme without increasing the budget.

There is a very definite shortage of capable trained Public Health Nurses at the present time, which is discussed elsewhere in this report. There are fifty Public Health Nurses in the Province to supervise outside of the large cities. To perform these duties more properly trained public-health nursing supervisors are urgently needed.

Miss Dorothy Tate, Public Health Nurse, was granted a fellowship by the International Health Division of the Rockefeller Foundation and is at present taking a one-year postgraduate course in New York and the Eastern States. Her studies include the recent advances in public health and public-health administration and the many phases of supervision. Miss Tate will be a valuable addition to the staff on her return as she will be qualified to assist the Director of Public Health Nursing, Miss Heather Kilpatrick.

Nutrition is an important war problem receiving special attention by the Nutrition Services of the Department of Pensions and National Health. To provide a medium through which information and material from Nutrition Services can be translated to

the people of the Province of British Columbia, a Nutritionist, Miss Mary Baldwin, B.Sc. (H.Ec.), was appointed to the staff. Miss Baldwin is organizing the nutrition programme in the Province.

At the Institute held for public-health workers in the spring, Public Health Nurses were prepared for this nutritional programme and received special instructions from Dr. Jennie Rowntree, an outstanding authority and lecturer from the University of Washington.

Duncan, Penticton, and Summerland are to be congratulated on the installation of chlorination equipment to safeguard their water-supplies. The latter two are using temporary equipment until such time as the proper installations can be made. These committees are providing a second line of defence in protecting the water they are supplying for human consumption.

In November and December an extensive epidemic of scarlet fever, localized in one area, was apparently spread by milk. This is one more costly example of the need for pasteurization and suitable safe-milk legislation.

The public-health phases of the problem of the blind are being investigated on a Provincial basis in conjunction with the Provincial branch of the National Institute for the Blind and the Department of Pensions and National Health. Conferences were held in regard to this matter and a comprehensive report outlining the problem with recommendations should be possible in 1943.

A dentist with the American Forces in the Peace River area has demonstrated the "good neighbour" spirit by providing dental services for some of the children in the area who have been unable, due to the shortage of dentists, to receive this attention for some three years.

Prince Rupert Health Unit was organized in the spring of 1942 because of the serious health problems facing that community and the surrounding area. Much of this was due to the rapidly increased population and the resulting terrific overloading of the facilities of the community. The problem was considered so urgent and was so closely related to the war effort that it was necessary to transfer the Health Officer, Dr. Taylor, from the Abbotsford Health Unit to the Peace River Health Unit to free Dr. Macdonald, who was appointed to take charge of the Prince Rupert Health Unit. The Public Health Nurses are now carrying on at Abbotsford. The co-operation of the people in this area in adjusting themselves to the reduced services should be greatly commended.

In the Peace River area the local facilities were also called upon to meet demands far beyond their capacity and many sanitary and public-health problems resulted. For this reason a trained Sanitary Inspector was added to the staff of the Peace River Health Unit to work in co-operation with the director and the three nurses. This Health Unit is operating with one Public Health Nurse short, who was urgently required in another part of the Province. It is anticipated that additional Public Health Nurses will be available in the spring.

An extensive immunization programme has been conducted throughout the Province, many children being protected against diphtheria, smallpox, scarlet fever, whooping-cough, typhoid fever, and tetanus.

The new communicable disease regulations have been advanced to the stage where they are ready for presentation to the Board of Health for consideration.

The Provincial Public Health Laboratories continue to show an extensive increase in the number of specimens examined. The demands made on this service are tremendous. Due to the lack of suitable accommodation it has been very difficult to meet this increased load.

The Provincial Laboratories perform certain phases of the processing of the blood collected through the Red Cross for the Armed Forces. This work entails a great deal

of extra volunteer time on the part of the technical staff and has required the purchase of a fourth house to make available a sufficient space to meet the increased demands for blood and the work of the laboratory. This new building will relieve temporarily to some extent the pressure. The need for suitable laboratory accommodation is still an urgent one and should be met at the first opportunity.

Because of the more extensive use of the branch laboratory in Prince Rupert a technician was added to that staff by the Division of Laboratories of the Provincial Board of Health.

In December a fire occurred at Tranquille, destroying fire-hall, patients' canteen or store, quarters for the firemen, and both the fire-truck and ambulance. A new structure and fire-truck will be required to replace these. An ambulance has already been procured.

At the present time between 200 and 300 new tuberculosis hospital beds are urgently needed.

INDUSTRIAL HYGIENE.

A programme of industrial medicine has been developed in the shipyards in the Greater Vancouver area by the War Time Merchant Shipping Board in co-operation with the Metropolitan Health Department of Greater Vancouver and the B.C. Medical Association. This programme is progressing satisfactorily.

An independent outline of a programme of industrial hygiene to embrace as many industries as possible has been drawn up by the Provincial Health Officer for study. It is hoped that a co-operative programme will result, utilizing all facilities available, to improve the health of industrial workers.

Dr. Donald H. Williams, Director of the Division of Venereal Disease Control, was invited to take charge of the Venereal Disease Control Programme for the Canadian Army and is now at headquarters in Ottawa. Dr. Williams's temporary absence is a great loss to the Province of British Columbia, but he will be a real asset to the Canadian Army Medical Corps.

REPORT OF PLAGUE SURVEY OF BRITISH COLUMBIA, 1942.

BY F. L. BEEBE.

INTRODUCTION.

During the latter part of the spring and until August 8th of the summer of 1942, work was carried on for the fifth consecutive year collecting rodents and examining them for symptoms of plague. Due to the impossibility of procuring tires, owing to the war, the Province was covered only once, instead of twice, as was done in previous years. The country studied was essentially the same as before, but fewer collections were taken because the crew was engaged in tick survey work in the East Kootenays until May 12th, when the rodent work was begun.

The crew consisted of two men, G. Dowding as assistant and the writer in charge. Work commenced on May 12th and continued until August 8th. A single run of the southern part of the Province covered most of the major colonies of the Columbia ground-squirrels, *Citellus columbianus*. Each colony was worked only once instead of twice or more as previously. An attempt was made to link the major colonies by taking roadside collections wherever animals were seen. Conditions bordering highways seem to be ideal to the animals' requirements and many of the highways in the Interior seem to have more or less continuous colonies along them, bounded very definitely by the standing timber on each side of the road allowance. There can be but little doubt that the animals spread from one area to another by the simple expedient of colonizing these strips. Railroad rights-of-way are used in a similar manner.

The 1942 season differed in some respects from any of the previous seasons, rainfall being much heavier than normal during the entire summer, so that many days were lost on this account alone. The resultant rank growth of all vegetation, even in areas where ground vegetation is usually scanty, tended to make collecting difficult. About a month less time was spent on plague-work in 1942 than during previous seasons. In the early part of the season there was considerable rainfall. Thus collecting conditions were poor all through May and until the last week of June, when the weather finally turned fair and continued so until the end of the first week in July, and then the rains started again and continued intermittently, but not quite so heavily as before, until the first week in August, which was again mostly fair but which also terminated the season's work. Altogether, out of almost three months spent in the field, only a little over three weeks could be considered first-class collecting weather.

SUMMARY.

A total of eighty-eight days was spent in the field; of these twenty-five were lost through rain or through having the survey-truck in for repairs. Of the sixty-three days when collections were taken, twenty-nine were cloudy or rainy; thirty-four days of the entire season being really good collecting weather. In the sixty-three days worked, a total of sixty-nine separate collections was taken. Of the 1,663 animals taken, six were ground-hogs or yellow-bellied marmots, *Marmota flaviventris*; five were varying hares, *Lepus americanus*; the remainder were all Columbia ground-squirrels, *Citellus columbianus*. Of the fleas taken, sixty were from the marmots and three were from the hares.

DISEASE SYMPTOMS.

Apparently diseased tissue was found in the first collection taken, some six of the collection of twenty-one animals showing a hæmorrhagic condition of the lungs. Lung-tissue from these specimens was sent to the laboratory for examination. This condition was encountered subsequently in a few animals from nearly every area where collections were taken and, in one case at least, an animal was found in a dying condition, apparently as a result of an advanced state of the lung condition described (No. 52, July 17th, Fernie). Toward the end of the season it was noted that many of the animals of the year found with the condition were apparently failing to become as fat as they normally should have been, although the older animals did not seem to be affected in this manner. There might well be some decimation of hibernating animals during the winter of 1942-43 from this cause. No disease symptoms other than the one described were found in any of the animals examined.

APPOINTMENT OF MISS MARY BALDWIN.

During the month of October another definite advance was made in the public-health programme in British Columbia. Early in the month Miss Mary Baldwin was added to the staff of the Provincial Board of Health as Consultant in Nutrition.

After receiving her public and high school training in Vancouver, Miss Baldwin attended the University of Manitoba, graduating from there in 1938 with a Bachelor of Science degree in Home Economics. The following four years were spent in teaching Home Economics to junior and high school pupils, for the first two years in Creston and the last two years in Vancouver. In addition, Miss Baldwin obtained further training through attending the annual summer school for teachers in Victoria, where she took special courses in Home Economics offered by the Department of Education.

During the summer, when school was not in progress, Miss Baldwin put her training to good use, and also secured valuable experience, through first serving with the

Extension Department of the University of British Columbia in giving lectures and demonstrations throughout the Fraser Valley in interior decorating and nutrition, and, finally, with the Central Volunteer Bureau in Winnipeg, where she supervised the canning of fruits and vegetables on a large scale for the Royal Canadian Air Force. For the past two years during the fall and winter months, in addition to her regular day-time duties with school children, Miss Baldwin has also acted as volunteer lecturer and demonstrator in nutrition to women's groups for the Greater Vancouver Health League.

Miss Baldwin brings to her new field of work, in addition to her academic background, a wealth of practical training which will stand her in good stead as she organizes and advances the nutritional work throughout the Province. She acts as the liaison officer between the Provincial Nutrition Committee and the Provincial Board of Health, in order to correlate the educational work under the supervision of the former and the general public-health programme carried on throughout the Province by the various Health Officers and Public Health Nurses.

THE HEALTH OF THE PEOPLE OF BRITISH COLUMBIA.

The following is a brief summary of the health of the people of British Columbia, based on the statistical data available. The information used was that obtained from the registrations with the Division of Vital Statistics during 1942 and applies only to deaths occurring in 1942. As there are always a number of delayed registrations, the figures of which were not available at the time of writing this article, it will be seen that the figures herein are only *preliminary*. For instance, at the time of writing, January returns which will include some December figures have not been received. It is felt that a summary of this nature should be of considerable interest.

The health of the people of British Columbia is reflected only to a certain extent in the mortality figures for 1942, and care should be exercised in studying these, if correct impressions are to be gained. The preliminary death-rate in 1942 was 10.5 per 100,000 population, which was the same as the rate for the previous two years. Again there is an increase in the actual number of deaths at ages 60 and over. Over half (58 per cent.) of the total deaths in the Province were in this age-group. One out of every five deaths were of persons between the ages of 40 and 59; approximately 9 per cent. between the ages of 20 and 39, and one out of every twelve under 20 years of age.

There were 606 infant deaths (children dying under 1 year of age) in British Columbia in 1942. This figure represents well over half of the deaths under 20 years of age. The preliminary infant mortality rate of 35.8 per 1,000 live births shows a decline from the 1942 final figure of 36.7 compiled by the Dominion Bureau of Statistics. This is a favourable trend and it is hoped that it may be maintained and indeed improved upon in the future. There were forty-four maternal deaths in 1942, giving a provisional rate of 2.6 per 1,000 live births. The 1941 final rate was 2.7 and that for 1940, 3.1.

Of primary importance in a study of this nature is the necessity to ascertain the leading causes of death. Causes of death naturally fall into certain broad groups. In previous years' reports "Diseases of the Heart" and "Diseases of the Arteries" were listed separately among the ten leading causes of death. In this year's report they have been consolidated into one heading, "Diseases of the Heart and Arteries." The reason for this change lies in the fact that the final figures for vital statistics for Canada and each Province are compiled by the Dominion Bureau of Statistics, and following the adoption in 1941 of the rules of coding set forth in the U.S. Manual of Causes of Death some variation occurred in classification of these two groups of causes of death. It was deemed advisable, therefore, to treat them under one heading for

the purposes of this study. In so far as comparisons with similar articles in previous years' reports are concerned, this regrouping has the effect of changing the order of some of the leading causes of death.

A study of the leading causes of death for all ages reveals that diseases of the heart and arteries were responsible for more deaths than any other condition, accounting for 2,962 in all. Cancer was the second leading cause of death; 1,145 persons died of this disease. The third cause of death was accidental deaths and the fourth tuberculosis; 527 persons died in the Province from tuberculosis in 1942. This gives a provisional tuberculosis mortality rate of 63.5 per 100,000 population. This shows a slight decline from the final 1941 rate of 65.2. If Indian deaths are excluded, the tuberculosis mortality rate then becomes 46.6. With the inclusion of delayed registrations of deaths it may well be that the rate may slightly exceed that of last year. Nephritis ranked fifth as a cause of death, followed by pneumonia and bronchitis. Diseases of early infancy ranked seventh and cerebral hæmorrhage eighth. There were ninety-nine deaths in 1942 caused by influenza.

To gain a full appreciation of the mortality picture of the Province of British Columbia we must consider the effect of Indian deaths on certain specified diseases. In general, Indian mortality exerts little influence on the ranking of the leading causes of death in the age-groups 30 years and over. It is under 30 years of age that the most significant differences occur; over 60 per cent. of all Indian deaths were under 30 years of age; over 20 per cent. were under 1 year of age; and over 33 per cent. were under 5 years of age.

Almost one-third of all Indian deaths was due to tuberculosis, over three-quarters of these deaths were among Indians under 30 years of age. Tuberculosis mortality figures and those of other diseases such as pneumonia and influenza are affected very unfavourably by Indian mortality. Indians are the wards of the Federal Government and so do not constitute a direct responsibility of the Provincial Board of Health. However, they cannot be ignored in a public-health programme as long as they present a threat to the health of the people.

If a strictly accurate picture of the responsibility of the Provincial Board of Health is to be estimated Indian deaths must be excluded from a study of this nature. Therefore the following statistics are exclusive of Indians. The figures must be analysed with an eye to both the cause thereof and the means of prevention to be of assistance to the Provincial Board of Health in its programme. A study of the chief causes of death of infants under 1 year of age reveals that prematurity ranked first, accounting for over one-third of the deaths in this age-group. The prematurity mortality rate rose to 10.8 in 1942. Undoubtedly, improved prenatal and postnatal care could reduce this figure considerably. The second cause of death among infants was found to be congenital malformations. This cause does not respond to treatment as readily as many others but improved prenatal care can exert favourable influences. This year shows a very favourable situation with regard to pneumonia and bronchitis; only a little over 5 per cent. of infant deaths were due to this cause. In 1941 there were twice as many deaths due to pneumonia and bronchitis among infants as there were this year.

Among pre-school children accidents were the leading causes of deaths. Twenty-five of the 106 deaths between the ages of 1 to 4 years were caused by accidents. Eleven of these were due to accidental drowning and four to motor-vehicle accidents. Some of these deaths could have been prevented. The second cause of death in this age-group is pneumonia and bronchitis—the figure of fourteen deaths should be reduced with new advancements in pneumonia therapy. Tuberculosis ranked third with seven deaths.

Between the ages of 10 and 39 years the leading cause of death was accidental death. Many of these deaths are preventable as are those caused by tuberculosis, which ranked second. The Division of Tuberculosis Control of the Provincial Board of Health has an outstanding programme which, with continued application, should reduce greatly the number of deaths due to tuberculosis.

The chief cause of death between the ages of 40 and 59 years was diseases of the heart and arteries. The second leading cause of death in this age-group was cancer. It is unfortunate that these degenerative diseases should take such a heavy toll in these most productive years. Both these diseases can be prevented or at least postponed until later years. Accidental deaths ranked third in these middle ages.

Diseases of the heart and arteries ranked first in the ages over 60. The second cause of death in this age-group was cancer and nephritis was third.

When we examine the figures for the communicable diseases (including Indian deaths) we find that 1942 figures compare favourably with those of 1941, especially in the cases of measles and encephalitis. The number of deaths from typhoid fever has again dropped slightly. However, there is one important exception. In 1941 we reported an alarming jump in the number of deaths from spinal meningitis. In 1942 the figure was still following this undesirable upward trend. There were twenty deaths from this cause in 1942. The very existence of these deaths from communicable diseases proves that we must continue without relaxation the methods designed to control and eliminate them. The public-health worker and private physician alike must always be on the alert to discover the presence of these diseases and institute control measures.

The field of public health is continually expanding. To-day it is concerned not only with measures to prevent illness and premature death but also with those designed to prevent premature crippling and invalidism. It must also plan means of lengthening the life of the people. Also its attention must be concentrated on reducing the number of deaths caused by degenerative diseases to people at the time of their maximum economic use to society. Now, more than ever, with an acute man-power shortage at hand, it is doubly important that emphasis be placed on this aspect of public health. On account of the limitations of the statistical data at hand at the moment pertaining to British Columbia, little or no mention has been made in this article of the injuries which, all too frequently, disable; or of the many diseases which although not in themselves serious enough to kill but which do incapacitate, temporarily at least. Sufficient is now known about the common cold, for example, to place it as one of the most important causes of loss of time in industry. To mitigate such minor diseases much can be done by the general populace in practising good health habits, particularly in regard to having an adequate and varied diet, proper rest, exercise, and relaxation. These are the fundamentals which must oft be reiterated, especially in wartime with the withdrawal of so many physicians for service in our Armed Forces. Every day of preventable ill-health is a credit on the Axis side of the ledger. The improvement of public health is an individual responsibility, not solely that of the workers in public health.

ADMINISTRATION OF THE PROVINCIAL HEALTH SERVICES.

Requests are received from time to time asking for information about the services provided through the Provincial Board of Health and the plan of administration. To meet such demands, and also to bring up to date and place on record the many changes made in the Provincial Health Services in recent years, the following outline of the responsibility, activities, and services of the Provincial Board of Health is published herein.

Those services described under the broad term Provincial Board of Health, are usually known in other Provinces as a Department of Health. British Columbia has retained the old nomenclature used during the nineteenth century when health services were first developed. Considerable confusion exists in interpreting the authority and meaning of the "Health Act" and regulations because of the retention of the term Provincial Board of Health used to designate the Provincial Health Services as well as the actual Board; a Provincial Department of Health would clarify the situation entirely.

In the original health service a Board of Health was formed of prominent, scientific persons from a community, a Province, or State, and a meeting of this Board was called to deal with any specific health problem. After careful study of the problem the Board planned the necessary action; instructions were given, the meeting adjourned, and there was no further activity until such time that another problem arose, when the necessary meeting would be called.

As time progressed and the problems, demands, and knowledge of public health increased it was found necessary to provide a permanent staff of technically trained persons to conduct a continuous programme of public health. This personnel formed the nucleus of the public-health services now known as a Health Department. The Boards of Health entering into this plan becoming the policy-forming, judiciary branch of the Health Department. Gradually these functions of policy were assembled as the direct responsibility of the Cabinet or the Minister concerned, until there was developed the type of Health Service commonly constituted to-day to serve Provinces and States.

In British Columbia the Provincial Board of Health consists of the Lieutenant-Governor in Council, sitting as the Board of Health, with the Provincial Health Officer as Secretary. The chief functions of this Provincial Board of Health are legislative in nature; that is, the passing of rules and regulations as provided for under the "Health Act" and related Acts and also dealing with special disasters that may endanger the public health. Other routine governmental Orders in Council are dealt with and passed in the routine manner provided for all Government departments.

The Health Services made available under the term Provincial Board of Health in British Columbia are organized as a branch of the Provincial Secretary's Department, and thus the Provincial Secretary acts as the Minister of Health. For technical purposes arrangements have always been made to permit the Provincial Health Officer to have direct access to the Minister so as to simplify technical discussion and policy.

The Minister deals with the broad policy to be followed by the Provincial Health Services and such other related matters requiring his personal attention.

All routine non-technical administrative matters are dealt with directly through the Deputy Provincial Secretary in the usual manner.

THE PROVINCIAL DEPARTMENT OF HEALTH.

An important function of a Provincial Government is to organize a body to which is entrusted the health of the people. The structure on which this responsibility rests is usually the Provincial Department of Health. The ideal of any Provincial Depart-

ment of Health is to develop a programme planned to meet the health problems of the Province and to control and prevent unnecessary disease and death.

Primarily, a Provincial Department of Health should be an educational, advisory, stimulating, co-ordinating, and stabilizing agency. In addition to effective leadership, it should provide laboratory and vital statistic facilities on a Province-wide basis; certain aspects of public-health engineering, such as the supervision of the design and construction of water-supply and sewage-disposal plants and their extensions and alterations; special epidemiological investigations, the more technical aspects of industrial hygiene, and X-ray and other consultative services where these are not feasible of local developments.

Although the original structure of Provincial Departments of Health will vary somewhat, a satisfactory department may well consist of a Minister of the Crown, a Deputy Minister or Provincial Health Officer, and his technical and generalized staff. A Board of Health is usually an integral part of a Department of Health. The Board of Health is usually composed of the Lieutenant-Governor in Council with the Deputy Minister or Provincial Health Officer acting as Secretary. The Minister of the Department constitutes the policy-forming branch; the Board of Health, the judiciary branch; and the Provincial Health Officer and his staff, the technical executive and administrative branch of the Department.

The better organized Provincial and State Health Departments have assumed responsibility for the development of at least those activities considered as the minimum essentials of a well-balanced public-health programme, which should include at least the following: Vital statistics and records; communicable disease control and prevention, including tuberculosis and syphilis and gonorrhœa; public-health laboratory service; maternal and child health, including prenatal, delivery, postnatal, infant, pre-school, and school health services; environmental sanitation, including water-supplies, sewage-disposal, control of milk, meat, and other foods and food products; industrial hygiene, including the public-health aspects of plumbing and some attention to housing; general as well as specific health education or health information; public-health dentistry; mental hygiene. Nutrition and public-health nursing are assumed to be necessary integral parts of the programme. Many Provincial and State Departments of Health embrace in their services pneumonia, and some include cancer and diseases of the heart. In certain parts of the continent specific diseases such as hookworm and trachoma constitute important phases of a State- or Province-wide public-health programme.

The successful assumption and execution of such responsibilities and authorities demand well-trained personnel and a carefully prepared long-range programme with emphasis on education. There is required also careful cultivation of co-operation between the several bureaus and divisions of the Health Department. For example, typhoid fever control depends on engineering, epidemiology, laboratory, and educational services. Similarly, health education demands co-operation of all bureaus and divisions, as does the profitable use of statistics and records.

As already indicated, the function of the Provincial Department of Health should be advisory, stimulating, and co-ordinating, with the providing of direct services only for those activities which cannot be rendered satisfactorily in local Health Departments. The effectiveness of any Provincial Health Department depends upon the extent to which it has been successful in establishing full-time local Health Departments with competent personnel conducting balanced local public health programmes.

The Provincial Health Department, other governmental and voluntary agencies, the physician, the dentist, and the people are the elements in a Provincial health movement. The Health Department acts as the leader, operating in effect as an educational agency and rendering such services as will augment and put to a constructive use the facilities of the Province and the community—its physicians, dentists, teachers, nurses,

and other professional and lay groups. Health Departments should accept the valuable contributions which other governmental and the voluntary agencies are equipped to make, and should seek advice and counsel on matters that will aid the public-health programme. They, in turn, should seek the direction of the Health Department to the end that the utmost in value may be extracted from every attack on health problems coming under their jurisdiction.

ADMINISTRATIVE CHART OF THE PROVINCIAL BOARD OF HEALTH.

On page 21 will be found an administrative chart of the Provincial Board of Health of British Columbia, showing the chain of responsibility and authority and the flow of services from the various bureaus and divisions to the local Health Services and through them to the people of the Province of British Columbia. It should be noted here that the divisions are developed to simplify administration and not to act as water-tight compartments dealing with problems that are independent one from another. All health problems are dependent on each other because they all affect the health of the one group—the public. Much of the work done by each division may be done for or in relationship with other divisions of the Provincial Board of Health. Thus, in the case of an epidemic of typhoid fever, a laboratory will be required to assist in diagnosing the condition, finding cases and carriers, determining the infectiousness of cases and when isolation can be terminated. It also aids in the examination of water-supplies, milk-supplies, and other foods.

The Division of Vital Statistics, on the other hand, will be able to provide details in regard to the past experience of the Province or any particular part of the Province in connection with typhoid fever. The Division of Public Health Engineering will help in tracing down the mode of spread of the infection from the cases or carriers, acting as the reservoir, to the new cases which created the epidemic. It will also deal with the problems presented by water-supplies, sewage-disposal, milk-supplies, or other food-supplies that may be involved in the spread of the disease. The Bureau of Local Health Services comes into the picture first because the study of the cause, source, spread, and control of communicable disease or epidemiology is the responsibility of this Bureau. The Bureau will, therefore, aid in the study of the problem and will help the local Health Departments to cope with the situation.

Public-health education, on the other hand, will be needed to keep the public informed of the epidemic and what they individually and collectively must do to assist in dealing with its control.

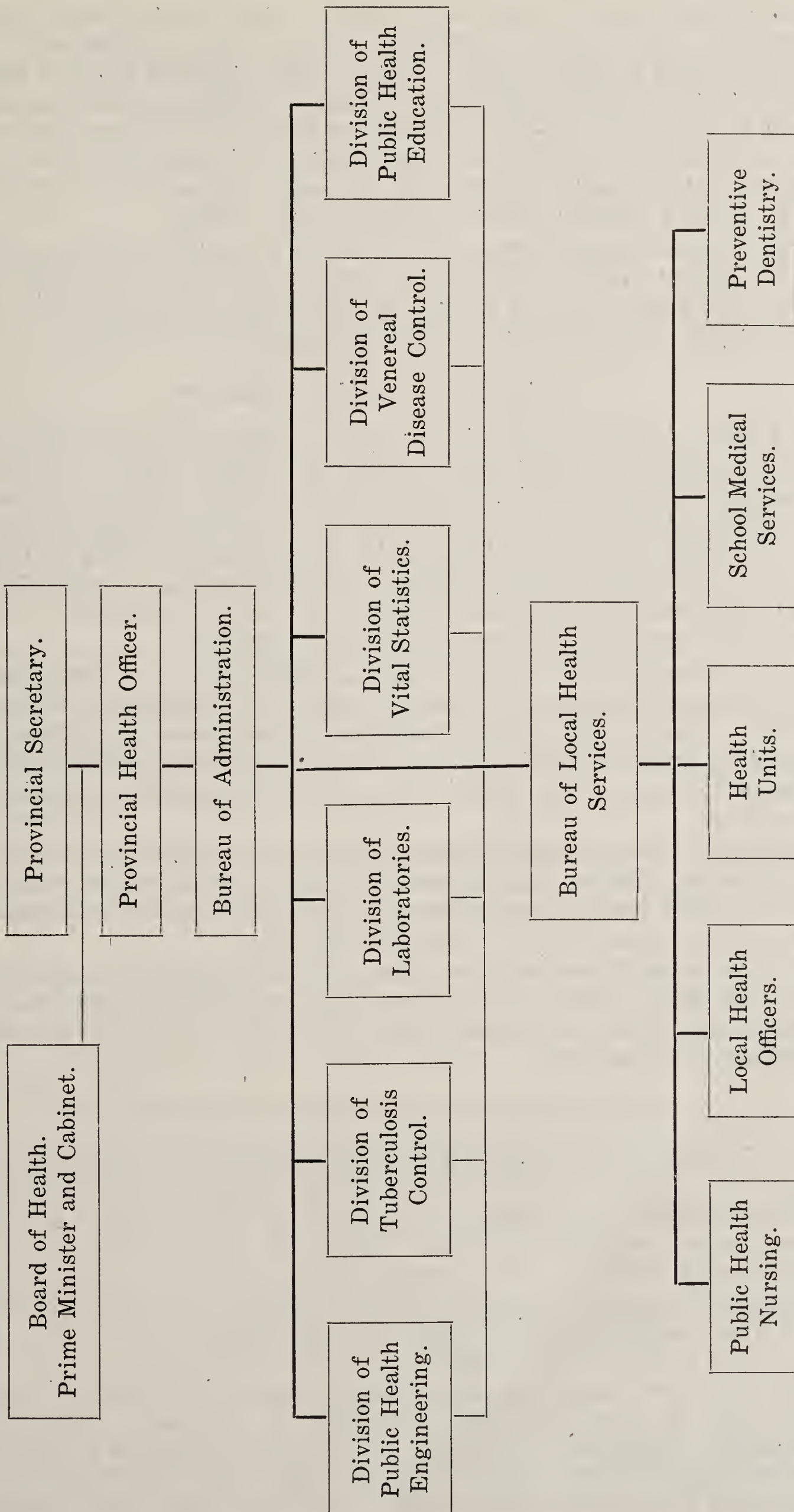
Thus it will be seen that the services and divisions are related closely one to the other and must be developed on a relative basis that will ensure the best possible results in the improvement of the health of the people.

Tuberculosis not only requires the diagnostic, stationary and travelling clinics, and hospital care, but also the follow-up of patients and their contacts in the home and the community. This follow-up service is most satisfactorily provided by a Health Unit or the local Public Health Nurses.

This demonstrates the close relationship which must exist between the specialized services of the Provincial Board of Health and the Local Health Services developed to deal with immediate health problems of the people in any particular community or area.

Heavy black lines on the chart show the flow of authority and responsibility through the Provincial Secretary and Provincial Health Officer to the Bureau of Administration and the various divisions of the Provincial Board of Health, as well as the Bureau of Local Health Services. A lighter line coming out of the lower part of each division is an attempt to show the flow of services from each division of the Provincial

ADMINISTRATIVE CHART.
PROVINCIAL BOARD OF HEALTH OF BRITISH COLUMBIA.



Services to the Bureau of Local Health Services, where the demands on the Local Services should be balanced and co-ordinated so that the local programmes are not lopsided and overdeveloped in any one aspect. It is possible with such a plan of administration to present to the Local Health Services a unified, well-balanced public-health programme that will aid them in meeting the varied health demands of the people they serve.

A brief outline of the duties, responsibilities, and services of each bureau and division should summarize satisfactorily the many and varied types of services performed or made available by the Provincial Board of Health.

The Provincial Health Officer must by law be trained in medicine and surgery and must be qualified as well in the broad, extensive and highly developed specialty of modern public health. He and his staff are responsible for carrying out the policy laid down by the Minister and Cabinet for the Government of the Province.

BUREAU OF ADMINISTRATION.

A Bureau of Administration is in reality the central office of the Provincial Board of Health, located in the Parliament Buildings in Victoria, which is responsible for the broad aspects of general administration and through which must pass all accounts, and much correspondence and information from the various specialized divisions and services. This Bureau is under the direction of the Provincial Health Officer and, in addition to the various intricate phases of administration, is responsible for many general programmes and specialized problems that cannot be allocated to or undertaken by the various divisions of the Provincial Board of Health.

General administration of the Provincial Health Services is complicated due to the fact that three of the largest divisions are located in Vancouver in different buildings and areas. This not only creates considerable correspondence but utilizes a great deal of time of the Provincial Health Officer and senior officials in travelling from one city to another and to various parts of the city. It also means much overlapping in general office services.

Pamphlets and other public-health literature of a general nature are distributed from this office. The series of prenatal, postnatal, or infant, pre-school, and school letters are mailed from the central office. Tuberculosis and venereal disease literature and material is distributed by the respective divisions.

In those areas where there are organized full-time Health Departments, Health Units, or in which Public Health Nurses are located, public-health literature is distributed locally. This includes the series of letters as far as Health Departments and Health Units are concerned.

DIVISION OF PUBLIC HEALTH ENGINEERING.

The Division of Public Health Engineering, located with headquarters in Victoria, is directed by a Public Health Engineer who is trained in engineering and has had special postgraduate work leading to a Master of Science degree in Public Health Engineering and considerable practical experience. This Division is responsible for all public-health problems whose solution primarily depends upon the many phases of engineering. Generally speaking, the following phases of the public-health programme are the direct responsibility of the Public Health Engineer:—

(1.) The supervision of water-supplies. The "Public Health Act" requires that the plans for new water systems or supplies and any additions to existing water-supplies must be approved before construction is commenced. This applies to all municipalities, companies, or others in the Province responsible for the development of public or private water-supplies. All such plans must be reviewed by an engineer who is versed in the often complicated public-health phases of the supplying of water

for human consumption. The division is interested in the safety of all public water-supplies in the Province.

(2.) Supervision of the milk-supply. Milk is one of the most easily contaminated food products used by man to-day. It has been responsible in the past for the spread of many serious epidemics of typhoid fever, paratyphoid fever, other intestinal diseases, scarlet fever, diphtheria, septic sore throats, and the general food poisonings. Such well-known diseases as undulant fever and bovine tuberculosis, which are primarily diseases of cattle, can be spread to man through the milk of infected cows. Human tuberculosis can also be spread by milk. Safeguarding of the milk-supplies by proper handling and production methods and procedures as well as pasteurization present many complicated public-health engineering features. The plans of all pasteurizing plants are supervised by the Public Health Engineer before construction is authorized.

(3.) The supervision of sewage-disposal. The disposal of human sewage is a complicated procedure and if improperly handled can be responsible for the spread of many epidemics of intestinal diseases and, therefore, creates another problem requiring the attention of public-health engineering. It is surprising how often sewage is treated assuming that it is merely a liquid and, therefore, only requires the same precautions that are necessary for any liquids. The result of this type of attitude is responsible for many serious complications and often the expenditure of large amounts of public moneys that could have been saved if authorization and approval of plans had been procured as required by law from the Provincial Health Services before construction was commenced.

(4.) The supervision of swimming-pools and camps, such as lumber, mining, and others, all have public-health engineering aspects.

(5.) Heating, lighting, and ventilation are still other problems that have health implications requiring expert engineering advice.

(6.) Food-handling establishments as well as food manufacture and processing plants, restaurants, lunch-counters, and stores present many phases of sanitation requiring attention.

(7.) The supervision of the beds from which shell-fish are taken and the processing and handling of shell-fish are important because of the many opportunities for contamination of these items of the food-supply. Many engineering features require specific attention.

(8.) The disposal of garbage and other wastes creates many complaints and these problems usually take up a great amount of the time of the Division than their public-health importance warrants. Odours from various trades are another frequent cause of complaint. Instructions can often be given whereby these can be dealt with in a simple, inexpensive manner.

(9.) The construction and operation of military camps, new industries, and other emergency and permanent construction within the Province, related to the war, has created tremendous demands on the time of the Public Health Engineer.

There are many other phases of sanitation and other matters closely related to public-health engineering that are too numerous to mention here.

NEEDS.

One well-qualified expert in milk and other problems related to food is greatly needed in this Division, as well as an assistant Public Health Engineer.

DIVISION OF TUBERCULOSIS CONTROL.

The Division of Tuberculosis Control spends the largest proportion of the entire budget of the Provincial Board of Health, because of the tremendous cost of operating tuberculosis hospitals and sanatoria. This Division has its headquarters in the City of

Vancouver at the Vancouver Tuberculosis Unit near the General Hospital. It is under the direction of a part-time physician particularly qualified in tuberculosis administration. The Division operates Tranquille Sanatorium near Kamloops, a hospital attached to and an integral part of the Vancouver Unit, and supervises the Oriental Hospital in Vancouver and two tuberculosis branches of the two General Hospitals in Victoria.

In addition, the Division operates stationary diagnostic clinics at Vancouver, Victoria, and Tranquille, and at one time, until the medical staff was depleted by the demands of the Armed Forces, the Division operated four travelling clinics—one on the Island with headquarters in Victoria, one for the lower Mainland with headquarters in Vancouver, one for the Okanagan Valley and Kamloops district with headquarters in Kamloops, and the fourth for the Kootenays with headquarters in Nelson. These travelling clinics provided diagnostic service for the people of the Province through their local Health Departments and family physician free of charge.

The Division also provides pneumothorax refill service for patients discharged from hospital and others requiring this treatment, through over fifty physicians in various parts of the Province. Special pneumothorax outfits have been provided and the physicians and the hospitals where these services are given are reimbursed for the services. The follow-up by Public Health Nurses and Welfare Workers of the tuberculosis patients and their contact are performed by those Public Health Nurses employed by the local Health Departments and agencies and the members of the Field Service, Social Assistance Branch, Provincial Secretary's Department.

DIVISION OF LABORATORIES.

The headquarters of the Division of Laboratories is located in the City of Vancouver in four renovated houses on Hornby Street, opposite the Court-house and immediately behind the new Vancouver Hotel. This Division is directed by a specialist who is an authority on the many phases of bacteriology and who provides a part-time supervision service. In addition to the main laboratory in Vancouver, there are six branch public-health laboratories established through grants made by the Division of Laboratories to various hospitals or persons for the purpose of providing public-health laboratory services for the area adjacent to these centres. These branch laboratories are located at Kamloops, Kelowna, Nelson, Prince Rupert, Victoria, and Nanaimo. Public-health laboratory service is provided by this Division to the other divisions of the Provincial Board of Health, to local Health Departments, Public Health Nurses and to many individual persons through their hospitals or family physicians. The public-health laboratory aids in the diagnosis of the many types of communicable disease, including tuberculosis, syphilis, and gonorrhœa. It examines, bacteriologically, water, milk, and food samples, and performs such other laboratory procedures that are required in modern public-health programmes. The laboratory assists public health to advance and aids greatly in the development of adequate control procedures to meet specific problems.

A great deal of free service is provided to aid the Armed Forces in dealing with their public-health problems. This has meant a tremendous increase on the already greatly overloaded facilities of the laboratory and staff. A new suitable building or central laboratory is urgently needed.

DIVISION OF VITAL STATISTICS.

The headquarters of the Division of Vital Statistics is located adjacent to the main office of the Provincial Board of Health in the Parliament Buildings in Victoria. It is under the direction of a trained statistician who also acts as Registrar of Births, Deaths, and Marriages. The Division is charged with the registration, collection,

tabulation, and analysis of births, deaths, and marriages, and has certain responsibilities in connection with the "Adoption Act" and administration of the "Change of Name Act." The Director of the Division also acts as supervisor of all medical records for the various divisions and services of the Provincial Board of Health.

The Division provides statistical analysis and services to all divisions of the Provincial Board of Health as well as to local health services. These local data are used to analyse the public-health problems and to aid in the development of a suitable programme in connection therewith. The statistical data are also utilized to check the progress of the programme and indicate the need for change or reorganization from time to time.

The Division also analyses by number the case records of the T.B. and the V.D. Divisions. This procedure permits advanced statistical analysis of the data from many angles at any time through the use of modern mechanical tabulation methods.

A new procedure of registering all cancer cases was commenced in 1941 in co-operation with the Cancer Committee of the British Columbia Medical Association and it is anticipated that this will provide more complete figures on cancer in the Province than has been possible in the past. It is planned to analyse this material so that the Provincial Health services will be in a better position to understand the cancer problem in the Province and can, therefore, assist in the development of services to meet the problem.

Besides the closest co-operation with the Armed Forces, certificates are provided on request *re* births, deaths, and marriages.

The monthly Bulletin of the Provincial Board of Health is prepared by this Division.

Statistical advice and services are made available to many other parts of the governmental service.

The Division of Vital Statistics perhaps demonstrates more than any other the interrelationship of the services of all divisions and bureaus of the Provincial Board of Health.

DIVISION OF VENEREAL DISEASE CONTROL.

The headquarters of the Division of Venereal Disease Control are located in the City of Vancouver, adjacent to the Vancouver General Hospital. This Division is under the direction of a very competent and highly trained Venereologist who has developed a programme of outstanding value in the control of communicable disease.

The Division operates a clinic in Vancouver, one in New Westminster, one in Trail, and one in Victoria. These clinics provide free diagnostic as well as treatment service to those requiring it. Treatment in venereal disease is an important phase of the control procedure. It is possible to render the source of infection (the case of venereal disease) non-infectious through adequate modern scientific treatment. This applies to both gonorrhœa and syphilis.

In addition, the Division provides consultation services for physicians, Health Officers, and others. This is by mail in outlying areas and has been extensively used. Drugs for the treatment of both syphilis and gonorrhœa are made available free throughout the Province to all persons needing this treatment through their hospitals, clinics, physicians, or health departments.

Though the clinical and some of the public-health laboratory service for the Division is performed at the Vancouver clinic most of it is handled by the Division of Laboratories. Venereal disease control specimens account for a great number of the specimens that are handled by the laboratory services. Here then, is another example of the relationship of the various divisions one to another.

The Division also conducts an extensive programme of public-health education throughout the Province in connection with the control and prevention of venereal disease. The results of this programme have been very satisfactory and widespread. An extensive educational campaign was conducted in connection with prenatal syphilis.

The Division has also conducted an extensive programme of education among senior high school children on a sound, common sense, dignified basis.

The suppression of prostitution as advocated by the Division and so effectively carried out by most police forces is producing a spectacular reduction in the venereal disease rates in the Province. British Columbia has a rate lower than any other Province in the Dominion; this in spite of the fact that in one centre suppression has not been satisfactorily enforced.

The closest possible co-operation has been maintained between the Division and the Armed Forces. It is essential that control of the civilian population be maintained as all cases of venereal disease in the Armed Forces originate from civilians.

DIVISION OF PUBLIC HEALTH EDUCATION.

This Division was planned and would have been in operation if it had not been for the war and the difficulties imposed on procuring the right person to direct the Division. Public-health education is now conducted by all branches of the Provincial Health Services, as well as by local services, but it was the hope that this Division would co-ordinate all these efforts as well as provide certain centralized facilities and consultative and expert services in dealing with the many complicated problems of health education. It is hoped that after the war this Division will be developed on a sound and scientific basis to undertake an extensive programme already planned.

The need for a much more extensive use of educational methods and aids in presenting the available health information to the public is well recognized.

BUREAU OF LOCAL HEALTH SERVICES.

One of the chief responsibilities of a Provincial Health Department is to stimulate the progressive development, maintenance, and expansion of adequate local health services to meet the needs of the people. For this reason a Bureau of Local Health Services has been developed as an integral part of the Provincial Health Services. It is through this Bureau that contact is maintained with the numerous local health services.

It is the purport of the Provincial health administrative plan and its execution over a period of time to closely co-ordinate and balance the health services made available on a Provincial level with those of the local health services. These varied and specialized services have been developed to a considerable extent by Divisions of the Provincial Board of Health. These programmes must be balanced and translated into action in such a manner that they can be easily adopted and utilized by the local health departments. In other words, the Bureau of Local Health Services should act as the balancing media so that a reasonable correlation of effort can take place to save overlapping. All Provincial specialized services should be given an equal opportunity, according to the relationship their problem bears to the whole programme, to aid the local health services in developing adequate balanced programmes to meet the needs of the people.

To assist in this correlation the Bureau of Local Health Services is under the direction of the Assistant Provincial Health Officer. He keeps these services closely co-ordinated with the Bureau of Administration. Under the Bureau of Local Health Services are shown Public Health Nursing, local Health Officers, School Medical Services, as well as Health Units. The former three are shown separately because they

are now in existence though it is anticipated they will gradually be replaced by full-time health service or Health Units in the not-too-distant future.

The Health Unit is accepted by Public Health authorities as the answer to the problem of providing adequate local health service within the means of the local taxpayers. A Health Unit is merely a modern full-time health department staffed by full-time trained public-health personnel. In British Columbia, Health Units are responsible for all the generalized public-health services made available locally for the area they serve. These services include the school health programme as well as the usually accepted generalized public-health activities and are the media through which the specialized Provincial health services are translated into action for the people. Many parts of the Province do not fully benefit from these already provided Provincial specialized services because they have no adequate outlet in the form of trained full-time health service.

The Public Health Nurse working in close co-operation with the part-time Medical Health Officer is the best type of local health service next to the Health Unit. Public Health Nurses serve most parts of the Province and together with Health Units and full-time city Health Departments close to 90 per cent. of the population. As new Health Units are formed the Public Health Nurses will be absorbed into the new service, thus co-ordinating their efforts.

One of the greatest public-health needs in the Province of British Columbia at the present time is the further development of Health Units, to provide adequately public-health programmes for all the people. It is impossible for small cities, towns, and rural areas to independently employ sufficient full-time health personnel to meet their needs, but by combining their resources with those of adjacent communities and municipalities it is possible to develop and support a Health Unit with grants from the Provincial Government.

The funds to establish such full-time Health Units are provided from both the School Boards and councils of the component communities and from the Provincial Government. The grants from the Provincial Government are made from two separate departments. The Provincial Board of Health makes a grant for the entire Health Unit while the grant from the Education Department is given in consideration of the Public Health Nurses of the Units who undertake the accepted school health programme. It seems reasonable to hope that during the early post-war period the Dominion Government will contribute funds to aid in the establishment and maintenance of Health Units, both those now established and others to be developed in the future.

The monetary contributions required from the local communities to provide such full-time Health Units are in most instances very little more than that now spent to provide the inadequate and antiquated part-time service with which these communities have been served for years. The health programme available under a Health Unit is so far in excess of that now provided by the part-time system that many times the value is received for the money spent.

In addition to monetary grants the Provincial Board of Health provides expert supervision of the technical staff of the Health Units to assure the local communities of as high standards as possible—a standard that will be in keeping with the best in local modern public health available on the continent.

The Health Unit acts as a co-ordinator of all facilities available in the community and those that can be procured from the Provincial or Federal Government as well as such help made available through voluntary organizations or foundations. It also develops a programme based on the public-health needs of the area.

The Local Health Officer has the responsibility for influencing and, in many cases, for directing and developing the following health services in the area under his jurisdiction:—

- (1.) The accurate recording and analysis of births, deaths, and reportable diseases, and the proper recording and analysis of services performed;
- (2.) The control and prevention of communicable diseases, including tuberculosis, syphilis, and gonorrhœa, and immunization against those diseases for which this procedure is an aid to prevention;
- (3.) Laboratory aids to the diagnosis of communicable diseases for which such aids are helpful, and laboratory tests for water, milk, meat, and other foods and food products;
- (4.) The protection of maternal and child health, including adequate medical and nursing, prenatal, obstetrical, and postnatal services, and infant, pre-school, and school health services (public-health dentistry, nutrition, and mental hygiene should be integral parts of the programme):
- (5.) The sanitation and protection of water-supplies, excreta-disposal, and the inspection and protection of milk, meat, and other foods and food products, with some control of housing conditions, and, in most centres, industrial hygiene and adult hygiene:
- (6.) The prevention of accidents, particularly automobile, home, and industrial accidents:
- (7.) The investigation of cancer and other diseases having public-health aspects.

It should be understood that these are minimal authorities. In many instances, the Health Officer's responsibility will be much broader in scope.

While it is the duty of the Health Officer to assure the availability and adequate provision of these services to the people of the area under his jurisdiction, the specific agency or method of provision is not prescribed. That they are supplied is his obligation, though he need not necessarily supervise them directly.

The successful administration of such responsibilities necessitates an adequate, well-trained staff, particularly of qualified Public Health Nurses, and a continuous programme of health education. Of paramount importance is a capable Health Officer, equipped by education, training, and inclination for public-health administration.

LARGE CITY HEALTH DEPARTMENTS.

In other Provinces and States the policy has been to rigidly adhere to the principle of only providing specialized services to local municipalities and communities when it is economically impossible for such communities to provide these services themselves. The larger cities such as Montreal, Toronto, Winnipeg, New York, Chicago, Detroit, and so on receive little help from the State or Provincial Health Departments in the form of either a special grant or such services as tuberculosis and venereal disease diagnostic clinics. Many of the larger cities also provide their own sanatorium or tuberculosis hospital. Even public-health laboratory services are usually developed on a local basis.

In British Columbia, on the other hand, where there is only one large city and one medium-sized city that are comparable with the cities in the East, it has been the policy of the Provincial Board of Health to provide extensive specialized health services for these municipalities.

In both the Cities of Vancouver and Victoria to serve the surrounding metropolitan areas the Provincial Board of Health provides outstanding tuberculosis and venereal disease diagnostic clinics as well as treatment centres and hospitalization for tuberculosis. The only contribution toward these services from the local communities is a *per diem* grant of 80 cents for T.B. patients. This is the same for all municipalities in the Province. Any increase in cost of hospitalization is borne by the Provincial Board

of Health in the same manner that the increased costs of operating the clinic are absorbed by that agency.

The provision of this type of outstanding diagnostic and clinical service presupposes the provision of adequate facilities by the local community for suitable field public-health investigation work and follow-up. Such duties are always accepted as part of the responsibilities of a well planned and organized health department. Naturally any increase in the cost of the follow-up has to be borne by the local community just as the Province absorbs the increase in their service.

In addition to this, the Provincial Board of Health through the Division of Public Health Laboratories provides public-health laboratory services of an outstanding type to these municipalities far in excess of any contributions made by the municipalities. This particularly applies in the case of the greater Vancouver area.

The distribution of biological products for the immunization of persons against certain communicable diseases and the treatment of certain other communicable diseases is undertaken by the Division of Laboratories. These free products were made available to the City of Vancouver in the year 1941 to an extent far in excess of the amount formerly allotted in the city budget for the purchase of these products.

In addition to these above-stated specialized diagnostic treatment and hospital services the Provincial Board of Health makes available all of its consultative, advisory, and other services equally to the larger cities. The services provided by the Division of Vital Statistics, for example, to the Metropolitan Health Department in Vancouver are a valuable aid to that Department.

When the Metropolitan Health Department to serve the Greater Vancouver Area was established monetary grants in aid were made from the Rockefeller Foundation and the Provincial Board of Health to aid in the development of the new services and new personnel required to balance out the departmental organization of the various municipalities so that there would result a well-balanced public-health programme. All new service was shared on a one-third basis. That is, the Rockefeller Foundation provided one-third, the Provincial Board of Health one-third, and the local community one-third. The Rockefeller grants were on a five-year basis, with the understanding that they would start to be reduced at the end of a two-year period until their termination at the end of five years, half of this reduction to be taken up by the Provincial Board of Health and half by the local community concerned. This procedure has been followed out.

In addition, eight extra Public Health Nurses were provided for the City of Vancouver by grants only from the Rockefeller Foundation and the Provincial Board of Health. At that time it was the understanding with the Health Officer of Vancouver, Dr. McIntosh, that the City of Vancouver would add an additional four nurses to balance up the one-third basis. It has not, as yet, been possible apparently to carry out this part of the agreement.

In the year 1942 the monetary contribution from the Provincial Board of Health was over \$37,000 to the municipalities making up the Vancouver Metropolitan Health Department. Naturally the bulk of this money was contributed to the City of Vancouver.

The policy of amalgamating all the health facilities and services of the Greater Vancouver Area under the direction of one Senior Medical Health Officer and one Metropolitan Health Committee is considered as one of the most outstanding advances in local public-health administration in North America. Naturally, there are many changes and new developments that will take place in this service in the years to come made possible by the pooling of the health resources of the Metropolitan Area as one organization.

The large annual monetary contribution made by the Provincial Board of Health and the original grants from the Rockefeller Foundation were the chief factors in the final organization of this plan which had been mooted and studied for many years. The ultimate result and success will depend on the whole-hearted co-operation of the various contributing municipalities and the support and understanding of the people of the Greater Vancouver Area.

PREVENTIVE DENTISTRY.

Preventive or public-health dentistry is organized as part of the Bureau of Local Health Services because of its close relationship to the general health programme. The Provincial Board of Health was successful in obtaining the services of a young, well-trained dentist to undertake the direction of this programme and the performance of operative dental work for the children in unorganized territory beyond the reach of local dentists. This dentist has joined the Armed Forces and it has been impossible to replace him, so this phase of the work has been under the direct supervision of the Assistant Provincial Health Officer and Director of the Bureau of Local Health Services. There is no Provincial dentist now performing this service.

The Provincial Board of Health provides grants-in-aid to local groups or organizations who will undertake the development of local dental programmes along preventive lines. This grant varies from time to time and is paid on the understanding that certain basic principles of preventive dentistry are carried out.

The results of such programmes have been very satisfactory to date. In the future when more dentists can be added to the staff it should be possible to provide a much more extensive and public-health dental programme throughout the Province. This is an urgent need.

OTHER SPECIALIZED SERVICES.

Other specialized services such as industrial hygiene, epidemiology, and other matters not now fully developed are the responsibility of the Director of the Bureau of Local Health Services. As further specialized programmes are developed to the extent that a special division is required this can easily be organized. Those phases of mental hygiene undertaken by the public-health services are now under this Bureau. An extension of a practical mental hygiene plan closely correlated with the other preventive health services is needed in addition to the excellent work being done by the Behaviour clinics operated by the Provincial Mental Hospitals.

It will be seen that the Bureau of Local Health Services is the connecting link between the Provincial services and the community health services provided by the people. It is through this link that the flow of services provided on a Provincial basis or even a National or International basis can be brought to the local health departments and thence to the people throughout the Province of British Columbia. It should be understood that though all health organizations can direct certain phases of the preventive activities but that for full results and the ultimate improvement in health the people themselves must have a knowledge of public health, their place in the plan, and must apply in their every-day life the practical scientific information acquired. Adequate Health Departments can only be established and expanded to provide the trained guidance and leadership needed if the people will it and make available sufficient funds. Likewise health laws must be passed by the law-making agencies of the people before they can be put into effect by Health Workers. This applies on the Federal or Dominion as well as the Provincial and local levels.

BUREAU OF LOCAL HEALTH SERVICES.

J. S. CULL, B.A., M.D., D.P.H., DIRECTOR AND ASSISTANT PROVINCIAL
HEALTH OFFICER.

As mentioned in previous reports, Public Health Nursing, Local Health Officers, School Medical Services, Notifiable Diseases, full-time Health Services, Preventive Dentistry, and Public Health Engineering constitute the various phases of the Provincial public-health programme with which the Bureau of Local Health Services is concerned. In all of these fields the year 1942 was an active one to a greater or lesser degree. The continuation of the war has not lessened the creation of numerous health problems, but, on the other hand, has meant the continuation of adjustments and readjustments in order to provide the most efficient and effective health service possible under the existing conditions. It is to the credit of the public-health workers of this Province that the great majority of them have chosen the less glamorous field of fighting on the home front, in realization of the fact that this is where their services can be most effectively applied in aiding Canada's all-out war effort. As has been the custom in the past, the various sections of the work will be taken up under the headings which follow.

PUBLIC HEALTH NURSING.

Satisfactory progress can be reported in this particular field of activity. As was done last year, the report of the Director of Public Health Nursing is appended herewith and gives a broad picture of the changes in personnel that have been carried on, and also the problems that have arisen throughout the Province. Needless to say, practical solutions have not been found for all of them, but the appended report gives some indication of the plans for the year 1943 in this regard.

It is still felt that, unless only for a temporary period, it is essential to endeavour to retain standards in so far as qualifications of public-health personnel are concerned. In other words, to continue to employ as Public Health Nurses only those individuals who have actually taken special training in public health in addition to the regular hospital nursing training. This standard has been maintained during the year past, except in one or two instances as mentioned in the appended report, where it has been necessary to make temporary appointments of untrained personnel. We are fortunate, indeed, in having available nurses who are not only willing but sufficiently interested to carry on as best they can in filling these gaps until such time as qualified personnel is available. While it is true that there is a definite need for a very considerable increase in the number of available graduate nurses, it should be realized that, at the same time, there is an equally urgent need for many more Public Health Nurses. This can only be accomplished through an increased enrolment in the Public Health Nursing course at the University.

Unfortunately, to date, few, if any, general hospitals realize their position in a community plan of organization, and the correlation that should exist between hospital services, the public, physicians, nurses, and community groups of one type and another. They have been inclined to operate their services as a unit without any very particular reference to other community organizations. Similarly, the Public Health Nursing Services in the various areas have also, all too frequently, been operated with a similar lack of appreciation of their place as only one phase of community and social activity. There is room in this regard for a very much closer liaison between hospital staff nurses and Public Health Nurses, in order that each may have a much more intelligent and better understanding of the work of the other. Improvement in this mutual understanding is vital to the further progress of prenatal and infant welfare programmes of Public Health Nursing Services. It is hoped that 1943 may be the year in which some improvement along this line may be recorded.

There is also a very definite need for a better understanding of the work of each other, and also the services available through each other, as between Public Health Nurses and Welfare Field Visitors. No doubt, there has been some improvement in this regard as a result of the meetings of the Public Health Nurses' study groups, at which Welfare Field Visitors are invited to be present, but there is still room for further progress. As a matter of fact, there would appear to be a growing conviction among both welfare workers and public-health workers that both types of personnel should serve the same area and, perhaps, work out from the same district office. This would, indeed, be a most interesting experiment and one well worth trying, in view of the growing opinion in favour of the closer integration of these two services.

"The Institute for Public Health Workers" was held during Easter week in 1942, and was a very successful one indeed. It was possible to secure an authority on nutrition from the staff of the University of Washington, in the person of Dr. Jennie Rowntree, whose interesting and practical discourses on her specialty were one of the highlights of the meetings. Present also was Miss Grace Coffman, from the Health Department of the City of Tacoma, who gave a most comprehensive outline on maternal, infant, and pre-school health. In addition, there were also a number of contributions from the technical staff of the Provincial Board of Health. An earnest effort has been made to remodel the content of these meetings each year from a series of interesting but unrelated talks to a more practical form of discussion of a group nature concerning the most pertinent health problems of the day, from the point of view, in particular, of the field worker and the people of British Columbia. The enthusiastic reception of the type of programme which has been presented during the past two years is indicative, to some degree, of the wisdom of the policy in force at the present time.

The day following the conclusion of the three-day meeting with the Public Health Nurses was given over to a meeting between the senior technical officials and the full-time Health Officers throughout the Province. This was the first meeting of this type lasting for a full day, and proved to be a very worth-while innovation.

The "News Letter" from the Provincial Board of Health to the Public Health Nurses throughout the Province has continued to be published during the year just passed, and has continued to be a valuable means of exchange of ideas and information. There has been some increased participation by the Public Health Nurses, but there is still room for improvement.

SCHOOL MEDICAL SERVICES.

It was mentioned in last year's report that the time appeared to be rapidly approaching when it might be necessary to make some reduction in the frequency of examination of school children by School Medical Inspectors. Toward the end of the summer in 1942 it was realized that this time had arrived and, after some discussion, it was finally decided to recommend that only the children in Grades I., IV., VII., and X. be examined this year as a routine measure. In addition, the School Medical Inspectors would also examine such children from the other grades as were referred to them, either by the teachers or the Public Health Nurses. This plan has appeared to work out very well so far, and has no doubt been the means of relieving the physician doing this work from some of the time formerly involved. A circular letter was sent out in September to all School Medical Inspectors and School Boards in unorganized territory outlining this new policy. Every one concerned has accepted this revised frequency of school medical examinations in a friendly spirit of co-operation. The new report form on which are recorded the findings of the School Medical Inspector has continued in use and has further proved itself to be practical.

There has been a very considerable increase in the amount of immunization which has been carried on this year among school-age children, and more reference to this,

and also the result of the examination of the pupils, will be made in the separate report covering the medical inspection of schools for the school-year 1941-42.

EPIDEMIOLOGY AND NOTIFIABLE DISEASES.

A table on pages 77 to 80 shows the number of reported cases of notifiable diseases. The total number reported—namely, 28,772—represents a very considerable decrease from that reported during the previous year. In 1941 the figures showed a total of 40,019 cases reported. The decrease is occasioned by fewer cases being reported of a number of diseases, but with a very spectacular reduction in others. For instance, there were 15,562 cases of measles reported in 1941 and only 720 for 1942. Similarly, rubella (German measles) showed a reduction from 8,944 in 1941 to 812 in 1942. Cerebrospinal meningitis also dropped from 138 cases to ninety-six cases in 1942. There was a drop in the reported cases of influenza from 2,602 to a figure of 692 cases. However, as pointed out in previous reports, these particular figures are of little or no value because reporting of influenza is very poor. Chicken-pox, dysentery, and reported cases of undulant fever remained at about the same figure.

Conversely, mumps showed a very considerable rise from 1,735 cases during 1941 to a level of 12,267 cases. Scarlet fever also showed a rise to slightly more than 1,500 cases in all, with approximately 700 cases the year before. Whooping-cough again continued to show a rise and reached the total of 1,753 cases during the past year. It was regretted that an increase in the number of diphtheria cases had to be reported for the year 1941 and a still further increase has occurred during the year 1942. From the 1941 figures of twenty-three cases, there has been a rise to sixty cases for the year just ended. This is all the more regrettable when one realizes that diphtheria is a disease which does not need to occur in British Columbia. Immunization of children against this disease was commenced in 1929 and a very considerable number have been protected since that time. Coincidentally, the number of cases of the disease, as well as the number of deaths, has dropped steadily until two years ago. It is true that there has been a very considerable increase in immunization during the past year, but still much remains to be done. Parents must still be convinced that diphtheria can only be wiped out in this Province in direct proportion to their willingness to accept this measure of protection for the health of their children. Also, physicians in private practice could do much to improve this situation if more emphasis were placed on the need for this type of immunization of their young patients. It was indeed fortunate that in the sixty cases which did occur, only one death resulted.

Typhoid and paratyphoid fevers combined showed a reduction from fifty-nine cases for the previous year to thirty-one cases during 1942. This is a gratifying reduction, but still does not warrant any decrease in the focusing of attention on the need for safe water and milk supplies, both public and private.

The epidemic of equine encephalomyelitis (sleeping sickness in horses) which occurred in the Prairie Provinces during the summer and fall of 1941 did not spread to this Province, in so far as human beings are concerned. There were, however, a number of cases of this disease in horses. During 1942, there were again a number of cases in horses, particularly in the southern part of the Okanagan Valley. The first definitely proven case in a human being of which we have a record occurred in 1942 in the Kelowna rural area. The control of this disease is primarily a veterinary problem, since there is little doubt that if the disease was either eliminated or prevented in horses, the danger of the infection in human beings would be almost completely eliminated. The efforts which the Provincial Department of Agriculture are making to have all horses in the southern and south-eastern parts of the Province inoculated against this disease are to be commended. It is sincerely hoped that they may be successful in convincing the owners of horses that it is definitely to their advantage,

not only from an economic point of view, but also from a community health point of view to have their horses protected in this manner.

For the first time in many years there has been a decrease in the number of cancer cases reported. However, whether or not this is related to the decreased number of physicians in practice it is difficult to say at the present time. The analysis of reported cases has not been completed as yet, but it will be possible to give a more detailed report concerning this in the next annual report.

The reported cases of poliomyelitis were almost as numerous during 1942 as during the previous year, forty-seven cases being reported while fifty-four was the previous figure. During 1941 the cases were reported from widely separated areas of the Province, with no very definitely proven contact between the various individuals who developed the disease. In contrast to this, the majority of the cases during 1942 occurred in the Greater Vancouver area, with some of the cases appearing to have either a somewhat definite relationship to each other or else appearing to have possibly received the infection from the same source. The first reported case in the Province occurred during the week ending June 6th, and the number increased sporadically each week until a peak was reached during the first week in September, when ten new cases were reported. From there, the number of cases reported decreased rather rapidly, with an odd case being reported from time to time until the end of the year.

A considerable number of cases of a rather indefinite but seemingly communicable disease were reported from a number of centres throughout the Province during the year 1942. The characteristic feature of this particular disease was a varying degree of jaundice in the people so affected. The number of deaths which could be said to be due to this disease was very low. It is unfortunate, indeed, that there is not a trained epidemiologist as a member of the technical staff of the Provincial Board of Health. This particular disease, together with outbreaks of typhoid and paratyphoid, are worthy of further laboratory and field investigation which, unfortunately, cannot be carried on at the present time. The need is still acute for a person specially trained in the public-health aspects of the dairy industry, food handling, and general sanitation, and it is hoped that a person with these qualifications may be found. His entire time could very well be devoted to problems related to the public-health aspects of milk production, food-handling methods, and education of employers and employees in these and related matters.

FULL-TIME HEALTH SERVICES.

It was mentioned in last year's report that the year 1942 would no doubt be one in which considerable advance would be made in the protection of the public health by the staff of the Okanagan Valley Health Unit. This prophecy has proved to be true, since the year just past has been a very outstanding one for the co-operative plan of health administration now in effect in the Okanagan Valley. No better general description could be given of the work than the following, which, in essence, is the introduction to the annual report by Dr. Hershey for the Okanagan Valley Health Unit:—

“ Organization of this Unit was completed in January, 1942, with the formation of the Union Board of Health representing the various member districts and municipalities, and five meetings of this Board were held during the year for discussion of matters affecting both administration and general policy. The entrance into the Unit, early in the year, of the Municipality of Glenmore, and the replacement of the full-time V.O.N. services in the Peachland-Westbank district with the Public Health Nursing service, supplemented by a part-time V.O.N. service to take care of emergency needs, permitted the rounding-out of the organization plans for the Health Unit area. As now constituted, the Health Unit serves the following districts and municipalities: The Kelowna rural district, comprising the districts of Okanagan Centre, Winfield, Ellison, Rutland, Benvoulin, East and South Kelowna, Mission Creek, and Okanagan Mission,

the Municipality of Glenmore, the City of Kelowna, the Westbank district, the Municipalities of Peachland, Summerland, and Penticton, and the Naramata district.

"The Health Unit, in addition to providing a local full-time Public Health Service, also serves as an outlet for the various specialized services provided by the Provincial Board of Health, and efforts were made throughout the year to provide as complete a public-health programme as circumstances permitted. A number of problems, however, received special attention. Typhoid fever broke out in the early summer in the Rutland district; the flooding of rivers and streams and the abnormally high level of Okanagan Lake in the past year resulted in flood conditions which affected a large part of the district served by the Unit for a period of many weeks; the appearance of encephalomyelitis (sleeping sickness) in members of the horse population during the latter part of the summer focused attention upon the apparent threat of this disease to human beings themselves; and toward the end of the year a special problem in nutrition presented itself as a result of the present shortage of milk supplies in the Kelowna and Penticton districts. While these problems demanded special consideration, the general public-health programme, on the whole, was carried out as planned."

It was mentioned in last year's report that the increase in population in Prince Rupert was creating serious health problems, and early in 1942 it was considered advisable to make every effort to establish a full-time Health Service in that city. Discussions were carried on both with municipal officials and also with the Federal Department of Health, and finally, in May, full-time Health Services were commenced with a complete, qualified, and trained staff. The project was jointly financed between the Departments of Pensions and National Health, Provincial Department of Education, Provincial Board of Health, and the City of Prince Rupert. The staff consisted of a Public Health Physician, as Health Officer for the area and Director of the Unit, two particularly well-qualified Public Health Nurses, a trained Sanitary Inspector, and a Statistical Clerk. Splendid progress has already been made in handling a number of the most urgent health problems in that district, and no one either in Prince Rupert or elsewhere has any regret that another section of British Columbia is now under full-time local health administration.

Because of the shortage of Public Health Physicians, it was found necessary to close the Matsqui-Sumas-Abbotsford Health Unit in order to secure personnel for the opening of the Prince Rupert Health Unit. Two Public Health Nurses instead of three are now located in Abbotsford, and are carrying on a minimum, generalized, public-health programme in place of the full programme formerly carried on by the Health Unit staff. This was the first time that it had been found necessary to close a full-time Health Unit in the Province, and it was unfortunate that such had to be done, but in this case there was no alternative, as it was a question of tackling the most serious and urgent problems first. Because these were located in the Prince Rupert district, the establishment of the Health Unit for that area was given priority.

Our assumption that the Peace River district would be the scene of much activity during the year 1942 has proved correct. The very large number of both troops and civilians who have gone into that section of the Province has led to the creation of a number of public-health problems. Perhaps the most acute and most obvious is the overcrowding due to the shortage of adequate housing accommodation. All facilities which in normal times would be quite capable of coping with the need have been severely overtaxed, and it is extremely fortunate that a full-time Health Service was available to protect the public health. The question of proper food-handling methods, safe water-supplies, proper sewage-disposal, control of venereal disease, and the suppression of commercialized prostitution, as well as numerous conferences with the American Army Hygiene and Medical Officers, have taken up the bulk of the time of the Health Unit staff. It is only when one knows the situations which existed in the past, and the

advances that have been made in the past five or six years, that one is able to fully appreciate the progress that has been accomplished, and the benefits that can accrue to the population in even a frontier section of the Province such as the Peace River district, through full-time local Health Services.

The Metropolitan Health Board for the Greater Vancouver area has completed another year of effective health-work. It is interesting to note that in October, 1941, the first five years of this Metropolitan Health Service were completed, and the success of the plan during the preceding five years was such as to ensure its continuance by the various participating municipalities on a voluntary agreement. The following quotation is of interest, and is taken from the introduction to the annual report for 1941 by the Senior Medical Health Officer:—

“October 31st, 1941, saw the completion of the first five years of the combined services for the Greater Vancouver Health Area. The financial assistance from the Rockefeller Foundation, which enabled this amalgamation of services, has now ceased, with the exception of the continuation of a grant to Burnaby for a further period of nineteen months, to complete the five years for that municipality.

“It is, however, encouraging to know that the Provincial Board of Health is continuing its grant for the work, and with this interest and financial assistance, the parties to the agreement have agreed to continue the plan.

“I may here venture to say that in my opinion the Metropolitan scheme has fully justified its existence and continuance, and has proved its value beyond question in the co-ordination of services, uniformity of policy, and economy of operation.

“The needs of the war have made considerable demands on the personnel. Several of the doctors and nurses have responded to the call of duty, and it becomes increasingly difficult to find fully-trained personnel to fill the vacancies. We have been obliged to use temporary help in the meantime, and have been fortunate in obtaining the part-time services of two well qualified doctors for this purpose.

“The members of the Metropolitan Health Committee have taken a keen interest in the operation of the organization, and have been very faithful in attendance at the meetings. The intelligent interest and support of the various councils and boards has also been an important factor in carrying out the programme.”

It is hoped that a summary report for the year 1942 may be received in time to append to this report.

The Saanich Health Unit has continued to make good progress under the able guidance of Dr. J. L. Gayton. At the present time the staff there consists of the Director of the Unit, who is also the Health Officer for the municipality, three Public Health Nurses, a part-time Statistical Clerk, and a part-time Sanitary Inspector. In this district, as in others, numerous problems have arisen as a result of the war which have necessitated new planning, and revision of existing programmes. This Unit, also, has played a very active part in the local A.R.P. organization, devoting considerable time to A.R.P. administration, and also the holding of first-aid and home-nursing classes. Toward the end of the year Dr. Gayton was one of two physicians from the Victoria area who attended a special course given in Montreal concerning various gases which might be used in the war, and also the organization of first-aid and nursing services for gas casualties. Since his return Dr. Gayton has been extremely busy in endeavouring to convey this new information to as large a group of people as possible. It is unfortunate, indeed, that it has not been possible to bring up the Public Health Nursing staff of both this Health Unit and also the Peace River Health Unit to the full complement of four Public Health Nurses each.

During the year a number of discussions were held with a view to investigating the formation of a Metropolitan Health area for Greater Victoria district, which would include the municipalities of Victoria, Saanich, Oak Bay, Esquimalt, and the unor-

ganized territory extending out through Langford Lake and Sooke, to as far north as Jordan River. There is a very considerable amount of interest in the development of such intermunicipal health administration, and it is hoped that the time may not be too far distant when this plan may become a reality.

PUBLIC-HEALTH EDUCATION.

The year 1942 was a very active one in the field of public-health education. Numerous talks were given to, and many discussions were held with, School Boards, municipal councils, parent-teacher associations, nursing associations, and other community groups and organizations. These meetings covered in a general way the whole field of public health, including, among other things, the question of organization of Public Health Nursing Services, full-time local Health Services in the form of Health Units, community participation in public-health activities, supervision in public-health nursing, relationship of public-health nursing to community organizations, urgent public-health problems and other matters directly related to the people of British Columbia.

Our available supply of motion-picture films was loaned out more than in any previous year. Our sound projector has also been very busy during the year past. A further supply of up-to-date and authentic reference books on public health has been added to our reference library. These, and the other reference books are being used more and more by the Public Health Nurses, as they come to realize the value of keeping in touch in this way with current views and changing opinions in the various phases of public-health activity.

About three years ago arrangements were completed whereby a series of two or three lectures were given to the students at the Provincial Normal School in Victoria by one of the senior technical officials of the Provincial Board of Health. These lectures covered the administrative set-up of the Provincial Board of Health and the work of the various specialized divisions. This series of lectures, while short, was a very definite step forward, since there is no doubt but that teachers in training should have a reasonably good background of the public-health organization and the services available in this Province, if they are going to teach health adequately to their students. The number of lectures that were arranged through the kind co-operation of the Normal School authorities gradually increased until last year some eight lectures were given, one by each of the senior technical officials of the Provincial Board of Health. Among other things, there were covered public-health administration, local health services, public-health nursing, tuberculosis control, venereal disease control, vital statistics, and community sanitation. There is ample evidence that such a series of lectures is worth while, and it is sincerely hoped that it may be possible to continue them.

In addition to the lectures to the Normal School students, all of the senior technical officials of the Provincial Board of Health act as voluntary lecturers to the Public Health Nursing students at the University taking up their particular and various fields of work.

The difficulty of securing a reasonable supply of literature has not diminished. It is most unfortunate that it has not been possible to secure copies of some of the more worth-while publications. However, it is gratifying to be able to state that our distribution of letters to expectant mothers has been continued. This has been made possible largely through the continued kind co-operation of the Canadian Welfare Council. During 1942, more than 7,600 prenatal letters were sent to 855 expectant mothers who requested this service. Postnatal letters covering the first year of the baby's life were sent to 3,606 mothers who requested them. A total of more than 43,000 individual letters was sent out. The number of requests for the letters covering the pre-school and school ages of children were approximately the same as last year—namely, 1,041

pre-school letters and 250 school letters. All of the above figures might be thought to represent a decrease, but one must recall that during 1941, and as mentioned in last year's report, arrangements were completed with the Greater Vancouver Metropolitan Health Committee for the local distribution of prenatal and postnatal and also pre-school and school letters to the people requesting them from Vancouver. Formerly, these letters were sent out from the Central Office of the Provincial Board of Health in Victoria. When one realizes that under the former plan approximately 50 per cent. of the letters went to the Greater Vancouver district, and that now the number of letters forwarded from the Central Office remains approximately the same, it is evident that there has really been a very considerable increase in the number of requests for this type of educational literature.

A new policy was established, also, in 1942, in regard to requests for the various types of letters. Now, when a mother requests one of the various series of letters, her name is sent to the local Public Health Nurse if there is one working in her district, so that the nurse may visit this particular mother and supplement the information contained in the letters, and also give such other guidance and advice as might be needed. This plan has worked out very well, and is proving to be advantageous both to the Public Health Nurse and also to the people of her district. This is one way in which the people can be made more aware of the Public Health Services available in their own local area.

PREVENTIVE DENTISTRY.

A considerable number of local dental clinics which have functioned in a number of centres throughout the Interior of the Province have again continued to carry on this year. Others, of course, have been unable to do so, because of the shortage or absence of local dentists. It has been possible, also, to continue to give financial assistance to these local clinics, when they are organized on the basis which has been outlined in this report for the last two years. In brief, this means that the clinic must be operated on an annual basis, if at all possible; the service must be offered to all children of the lower grades in school; and a definite ratio of pre-school children must be included in the clinic. Perhaps the most difficult factor, still, is to have the people realize that preventive dental service for pre-school children is advisable and worth while, and also that their children should have periodic dental inspection at least every twelve months.

A number of discussions have been held with the travelling secretary of the Canadian Dental Hygiene Council, and it is gratifying to know that the policy in effect at the present time in British Columbia meets with their whole-hearted approval, in so far as the organization and operation of local dental clinics is concerned. In addition, it is also interesting to know that British Columbia is probably the first Province to include dentistry for the pre-school children as a definite and component part of school dental clinics, rather than making it a separate item.

Unfortunately, it was not possible to commence the analysis of the available information from the dental clinics which have been held during the past year. However, it is expected that this will be done early in 1943, as soon as a punch-card has been devised for the tabulating of the information. Arrangements were completed some months ago whereby it is possible to secure the same type of information from the Vancouver school dental clinics as from those in other centres of the Province. These figures, added to the ones already available, will make a much more representative sample of dental conditions existing in school and pre-school children than at the present time.

The continued shortage of dentists due to the war has served, in many instances, to make communities realize more than ever before the need for some form of preventive and periodic dental care. It is hoped that conditions may soon be restored to a more normal state in the near future, so that the benefits of modern preventive

dentistry may again be brought to pre-school and school children who are to-day unable to receive the benefits of this phase of modern science. There will be more need than ever in the post-war period to organize widespread dental programmes with clinics operating in as many areas as possible. In the meantime, it is advisable that every attention be paid to proper and adequate nutrition, and also proper dental hygiene, in order to postpone as long as possible the development of dental caries.

PUBLIC HEALTH ENGINEERING.

The continuation of the war has meant that the Public Health Engineer has been extremely busy in connection with the various sanitary problems that arise in connection with the encampment and stationing of large numbers of troops at various centres throughout the Province. There is the question of the provision of safe water-supplies, safe milk-supplies, proper sewage-disposal, housing in temporary construction camps, etc., that call for technical engineering advice and numerous discussions between the technical staff of the Provincial Board of Health and the hygiene officers and engineers of the three Armed Forces. Shell-fish sanitation has continued to receive attention, and it is expected that our new set of regulations will be ready early in the new year. The occurrence of a number of cases of mussel poisoning demanded prompt action in the spring of 1942, and the public were advised against the consumption of fresh clams and mussels until late in the month of October. The report of the Chief Sanitary Inspector and Public Health Engineer is appended herewith, and gives in greater detail the events concerning this particular outbreak last year.

The question of the chlorination of water-supplies has been a very live issue during 1942, but, fortunately, has resulted in many more people learning the true facts and the wisdom of chlorinating surface supplies. It is indeed unfortunate that so many people are still willing to make public statements concerning scientific facts, when the basis for such statements is either hearsay, or half truths, at the best. Milk-supplies have, of necessity, received much attention this year and the report of the Public Health Engineer gives further details in this regard. It is encouraging to note the increasing number of requests for public-health engineering advice from municipal and civic officials.

SUMMARY REPORT OF THE DIVISION OF VITAL STATISTICS.

J. D. B. SCOTT, B.A., B.COM., DIRECTOR.

THE CONTRIBUTION OF THE DIVISION OF VITAL STATISTICS TO CANADA'S WAR EFFORT.

The outbreak of war marked the beginning of what has become an ever-increasing volume of work carried on within the Division of Vital Statistics. Much of the additional work is a direct contribution to the war effort of the nation. For example, when soldiers, airmen, etc., apply for an allowance for their wives and children to the Federal Dependents' Allowance Board, the dates of marriage, birth, etc., and all personal particulars on the application are carefully checked so as to prevent payment to undeserving persons. The best and most logical source of confirmation of the facts pertaining to births, deaths, and marriages are the original registrations and records on file in this Division. Since the outbreak of war the Division of Vital Statistics has assisted the Dependents' Allowance Board in searching and certifying 41,863 documentary records of men with dependents in Canada's Armed Forces claiming allowances, of which 17,125 were made in the year 1942. Usually certificates were not issued to the Dependents' Allowance Board, instead, notations were made on the soldier's individual application forms for Dependents' Allowance. In some instances,

however, it was necessary to provide certificates for military purposes, such as recruiting, proof of age, or for proof of dependency. Over 5,000 such certificates were issued free of charge in 1942 to applicants requiring them for military purposes.

Many more legal procedures, such as delayed registrations of births, legitimation of birth, alteration of Christian names, and correction of documents, etc., have been completed by the Division than is usual in peace-time. This is as might be expected on account of the thorough and extensive documentation required by the Dependents' Allowance Board. A complete report has been made on each case and in some instances considerable correspondence has been carried on before a satisfactory conclusion can be reached. Services of this nature are also performed without charge to either the service-men or the Dominion Government and as such must be considered as one of the Division's contributions to the war effort.

The Division continued to carry on obligations previously undertaken to assist in the war effort. An example of this is the co-operation extended to the National Registration authorities. In the first place a monthly list of deceased persons, 16 years and over, is tabulated and sent to Ottawa. This list gives the name and age of the deceased and the date and place of death. Secondly, the Division has undertaken to collect the National Registration cards of each deceased person and transmits them regularly to Ottawa. In addition to these services, the Division also issues a printed notice to each applicant for a marriage licence, which states that notification should be made to the local postmaster of any marriage or change of address.

The Division continued to supply the National Selective Service authorities in British Columbia with a monthly list of deaths of single, divorced, and widowed men dying between the ages of 16 to 45. This facilitates the records of men to be called up for service in Canada's Armed Forces.

During the year 1942 the Wartime Prices and Trade Board approached the Division of Vital Statistics requesting assistance in maintaining a control over ration-books issued to persons in the Province. It was first decided that lists of deaths of all persons classified according to residence of the deceased should be prepared monthly and sent to the proper Rationing Office, of which there are four in the Province. Later on the Wartime Prices and Trade Board requested a list of marriages. This list is also made monthly, showing the names of the bride and groom and their respective residences.

The Division has endeavoured to help as much as possible the men in the Armed Services whenever it came in direct contact with them, either at the time when they were registering births of their children or applying for marriage licences, etc. They assist them in the completion of their applications for Dependents' Allowance. Sometimes these men are either minors or intend to marry minors and every effort is made to facilitate them obtaining the proper consent and proofs of age which are required before a marriage licence can be issued.

Since the outbreak of hostilities in the Pacific the Division has had to prepare various estimates of population of cities, municipalities, etc., for the use of local Air-raid Precaution authorities. Some of these estimates are difficult to make owing to lack of original source of material. Nevertheless, these estimates must be made, taking into consideration as many factors as possible which make up population statistics.

The Division of Vital Statistics continued a duty undertaken in 1940 in connection with the reallocation to the Province of residence on the death registration of men of the fighting forces who are killed or died overseas during their period of enlistment. In co-operation with the Dominion Bureau of Statistics and the Department of National Defence all available information on duplicate forms is forwarded to the Division of Vital Statistics, in the Province of residence of the deceased, together with the name and address of the next of kin. This Division endeavours to secure information of

a personal and statistical nature not shown on the military or naval record, and upon completion of the certificate one copy is retained within the Division and the other forwarded to the Dominion Bureau of Statistics. Ultimately special compilations will be made from these data.

It is the policy of the Division of Vital Statistics to co-operate with the other Divisions of the Provincial Board of Health in carrying out the public-health programme laid down by the Provincial Health Officer. The impact of the war has caused fresh problems to arise within the Divisions of Tuberculosis Control and Venereal Disease Control which had to be solved by taking into consideration all available facts. Statistics are summarized facts and are necessarily one of the tools required to help solve public-health problems. As a result, the Division tabulated and prepared data relating, for example, to the incidence of tuberculosis among the Japanese at the time of their confinement to restricted areas. Also, the incidence of venereal disease had to be determined in areas where military and war-time activities have grown on an unprecedented scale before a proper programme of control could be initiated. Similarly, data were compiled for the Central Administration of the Provincial Board of Health relating to its part in the war effort. Co-ordinated effort along these lines will continue to grow as statistics help to supply the facts necessary for the full advancement of the public-health programme, whether in peace-time or war-time.

THE EFFECTS OF THE WAR UPON THE DIVISION OF VITAL STATISTICS.

The effects of the war on the Division of Vital Statistics were marked in 1942, even apart from those already dealt with under the heading "The Contribution of the Division of Vital Statistics to Canada's War Effort." The continued increase in the number of marriages and births is a direct sequel of war-time activity in a Province not the immediate scene of hostilities.

The volume of registrations received by the Division was greater than the number received in any previous year. The following is a table showing the increase in registrations over a seven-year period, 1936-42:—

Year.	Live Births.	Deaths.	Marriages.	Still-births.	Adoptions.	Divorces.	Total.
1936	11,186	7,254	5,465	236	80	463	24,684
1937	13,033	7,981	6,232	254	109	536	28,145
1938	13,812	7,455	6,158	259	134	652	28,470
1939	13,176	7,626	7,897	279	150	608	29,736
1940	15,616	8,386	9,694	280	163	687	34,826
1941	17,025	8,617	9,828	308	191	563	36,532
1942	18,361	8,918	10,912	313	157	849	39,510

Undoubtedly the war has been chiefly responsible for the large increase in the marriages and births. The small increase in the number of deaths may be attributed to the gradually increasing age of the population of the Province. While some parts of the Dominion may experience a falling off in the birth and marriage rate due to the large number of men being drawn overseas, it is expected that this Province will not have this experience on account of the necessity for keeping adequate reserves on the Pacific Coast of Canada.

One of the major problems encountered by the Division of Vital Statistics in the year 1942 was that of staff turnover. The Central Administration of the Division, like other Divisions of the Provincial Board of Health, has suffered since the war from loss of trained personnel. At the outbreak of war the Division had nineteen members on the staff. At the close of 1942 the Division had thirty-three persons on the staff.

Since the outbreak of war thirty-seven members of the staff have resigned, obtained leave of absence, or transferred, affecting all positions from the very top downward. During the year 1942, no less than twenty-two persons have left the Division, one of whom obtained leave of absence on account of military service, three transferred to other departments of the Provincial service, and five resigned in order to continue their education. The rest resigned in the hope of bettering their position or for personal reasons, such as marriage, etc. The burden of carrying on the work has fallen largely upon the staff who have remained with the Division since the onset of war. A number of the key personnel have been classified as performing an essential service within the Division for whom no ready substitute can be found. Great credit goes to these members of the staff in particular, as well as to the other junior members who have worked hard, often putting in considerable overtime to carry on the service of the Division.

With the outbreak of hostilities in the Pacific on December 7th, 1941, a fresh problem immediately arose—namely, the preservation of the vital documents in the Division of Vital Statistics at Victoria. The Division has in its vault original registrations dating back to 1872; indeed, a few of the old colonial registrations are on file. In round numbers the Division of Vital Statistics has approximately 800,000 original documents on file. Except for the very recent registrations it would be practically impossible for the Division to secure re-registration. Certificates are now issued from original documents of births, deaths, and marriages. If the original documents were destroyed it would be well-nigh impossible to give an exact reproduction of the facts as initially recorded, particularly as the copies in the District Registrars' offices are neither complete in number nor accurate in content. This would create a most serious situation as the majority of the people born in the Province would then be unable to produce proper verification of these vital events in their lives.

Various suggestions concerning the safeguarding of the records were considered. One was the removal of the Division and its records to a more protected spot elsewhere in the Province; another was to construct a bomb-proof vault in the Parliament Buildings; yet another was to use the sub-basement of the same building. The solution to the problem will be settled early in 1943 in a twofold manner. In the first place, the Provincial Secretary suggested that the possibility of photographing the records upon microfilm should be fully investigated without delay. Secondly, the Government proceeded to construct a bomb-proof, fire-proof, and water-proof vault to house the essential records of all Government departments in a place of safety not immediately adjacent to the Parliament Buildings. At the close of the year the vault has been constructed and the records of the Division are ready to be moved. A fresh problem of how to reduce the delay in transmission of the requests for certificates from the vault to the main office will have to be settled so as to reduce the inconvenience to the public to a minimum. Tied in with the solution of this problem is the intention of the Division to microfilm its records.

The following is a résumé of the more important considerations which led to the decision to microfilm the original records of births, deaths, and marriages:—

(1.) A permanent duplicate record of the original document and the indexes and cross-indexes thereto can be made by the process of photographing them on a special miniature film known as "micro-file" film. This film is guaranteed to last for at least one hundred years, providing it is not subject to excessive use.

(2.) A duplicate record can be made within a relatively short period of time, providing the work is put on a shift basis—it should take approximately four or five months.

(3.) Upon the completion of photographing the records of the Division on micro-file film it becomes immediately possible to issue certificates from this film rather than

from the original documents. This can be done by using a film reader or projector to view the photograph of the particular document requiring a certificate. The stenographer typing the certificate would merely have to follow the picture on the translucent screen rather than type from the original document. Besides having other advantages that will be dealt with hereafter, it would be possible to move the office of the Division of Vital Statistics either from the present building to another building in the same city or to another place elsewhere in the Province. The business of issuing certificates to the public would go on with very little interruption.

(4.) The reduction in size brought about by photographing the original documents on microfilm brings about a compression of the matter photographed in such a way as to save 99 per cent. of the filing equipment and space required for the originals. The finding of adequate storage-space is already a problem of the Division, and the fact that the micro-file film for all the records can be filed in a single fire-proof steel cabinet is sufficiently indicative of the minimum amount of space required to house the film.

(5.) Another consideration, and one that is becoming more and more important, is the prevention of everyday wear and tear on the original documents. Under the present circumstances the records are in constant daily use. The volumes are heavy and the records become worn by continual handling. This problem is one that has seriously engaged the attention of the Division for a number of years past, but without an apparent solution in sight until the possibilities of microfilming became known.

(6.) Every time a certificate is issued by the Division it is typed from the original document. This means that these documents are exposed to light during the time taken to type and check the certificate. Already the ink has faded considerably on some of the early documents on file in the Division. This situation is one which is bound to continue unabated as long as the original documents have to be used and hence subjected to exposure to light and sun. In addition, the paper used is subject to deterioration through changes of temperature and light conditions. Microfilming the documents records them exactly as they are and even although they continue to deteriorate the film can be reproduced indefinitely.

(7.) In spite of rigid checking, occasionally mistakes in typing or interpretation occur. The only way to eliminate errors of typing and misinterpretation is to give the person demanding a certificate a photograph of the original document. This can be done by making a positive enlargement from the negative micro-file film. In time such an enlargement would replace the typed certificates now issued by this Division. Micro-photography is utilized by some of the comparable Divisions of Vital Statistics in the United States as a means of issuing certificates to the general public. It is a logical step forward from the use of micro-file film (as a safeguard and protection of the original documents) to utilize it as a source of photographic copies in lieu of typed certificates.

(8.) The net result of using photographic enlargements for certificate purposes would be to reduce the number of personnel required in the issuance of certificates. This would also result in a reduction of the amount of space taken by the staff in an already overcrowded office.

For these reasons the Division has decided that its records should be microfilmed as soon as the equipment, which is now on order, can be delivered. By the adoption of this procedure the service to the public of the Province should be improved as a result of technical advances of which the Division should take advantage.

Under the "Marriage Act" there is provision for the registration of ministers and clergymen so that they may be given authority to perform marriages within the Province. With the new emphasis on defence in the Pacific the year 1942 marked a big increase in the registration of ministers and clergymen under the Act. Not only were there a far greater number of military units stationed in the Province with a greater

number of chaplains to be registered, but also there was a considerable turnover in the posting of chaplains from unit to unit. This is a natural condition from a military standpoint although it does make an unusual amount of work to that ordinarily done in the registration of ministers and clergymen. As well as keeping track of the fresh registrations, cancellations, and transfers, the Division also has supplied many military units with marriage registers. These have to be called in for checking at frequent intervals in order that all registrations of marriage of soldiers who have been married by their chaplains are on file with this Division. Once the men have gone overseas or have moved away it becomes increasingly difficult to remedy any discrepancies. Therefore, the books have to be frequently called in.

COMPLETENESS OF REGISTRATION.

It is the aim of every Vital Statistics official to have complete registration of births, deaths, and marriages in the area over which he has jurisdiction. Tests for certain areas in British Columbia have shown that the degree of registration has been remarkably high, approximately that of England and Wales. A further step was taken toward the goal of complete registration by obtaining a return from all private schools in the Province, excluding Indian residential schools. Previously, only the public schools of the Province have been required to make a return of all pupils entering school for the first time. With the extension of the scope of the return made from school sources a number of registrations were effected which otherwise would not have been made. In addition, arrangements have been made with the Elementary Correspondence School, conducted by the Province, to receive a return, commencing in 1943, for all pupils enrolled by that Branch. As the number of schools in the Province in rural areas is being reduced through lack of teachers it is felt that a check from this particular source will be valuable as it relates to pupils living in remote sections of the Province.

LEGISLATION.

No revision of either the "Vital Statistics Act," the "Marriage Act," or the "Change of Name Act" occurred during the year. However, work has been progressing on a draft of a proposed amendment to the "Vital Statistics Act" wherein the registration of Indians, under the meaning of the "Indian Act," will become compulsory instead of remaining on a voluntary basis as it is now. This legislation has been requested by the Indian Affairs Branch of the Department of Mines and Resources of the Federal Government. This will be one more step towards complete registration. Therefore, the Division favours such a proposed amendment to the "Vital Statistics Act."

CO-OPERATION WITH THE OTHER DIVISIONS OF THE PROVINCIAL BOARD OF HEALTH.

Besides extending to the other divisions the co-operation outlined in the contribution of the Division toward Canada's war effort, the policy of having the Division act as an adviser on forms, codes, statistical procedures, and format of reports has been carried out in accordance with the general plan of co-ordinated effort outlined by the Provincial Health Officer. The Division renders very tangible assistance to the Divisions of Tuberculosis Control and Venereal Disease Control respectively in the preparation, tabulation, and compilation and presentation of their monthly and annual reports. Acting in his capacity as Supervisor of Medical Records for the Provincial Board of Health, the Director of Vital Statistics checks all statistical and medical forms for preventable duplication of material and uniformity in questions, etc. A central index of all tuberculous and non-tuberculous cases was set up a few years ago in the Division of Tuberculosis Control. The work of repunching this index upon a sound

basis was carried on by this Division during 1942. Approximately 125,000 alphabetic index punch-cards, covering patients on record in the Division of Tuberculosis Control, were repunched by the Division of Vital Statistics during the year. Checking and sorting before final tabulation will be undertaken by this Division. Upon completion of this index the Division of Tuberculosis Control should have a very efficient alphabetic index for use in its Central Records Office.

In order to assist certain Health Units of the Province the Division has instructed the District Registrars to allow the Health Unit Directors access to the records of deaths and births (exclusive of illegitimate children) filed with them each month. This allows the Health Unit to have a better knowledge of the vital happenings in the community which it serves and enables them to take whatever action is necessary depending upon the trend of events. Such measures of co-operation will be extended upon advice of the Provincial Health Officer as the number of Health Units are increased in the Province.

The Division of Vital Statistics continued to carry on the editing and publishing of the Provincial Board of Health Bulletin. Two hundred and eleven pages of material were mimeographed in the year 1942. The circulation of the Bulletin was in excess of twelve hundred.

DISTRICT REGISTRARS' OFFICES, ETC.

At the present time the Division of Vital Statistics has eighty-six District Registrars of Births, Deaths, and Marriages and twelve Deputy District Registrars. In addition, there are 117 Marriage Commissioners and thirty-four Issuers of Marriage Licences appointed under the "Marriage Act." Necessarily, inspection of District Offices should be carried on regularly. Unfortunately this has not been possible in previous years. During the year 1942 the Inspector and Assistant Director of Vital Statistics made an inspection of thirty District Offices. Some of these offices had never been previously inspected and the inspection proved most worth while from the standpoint both of checking on the records kept in the District Offices and instructing the District Registrars, etc., concerning points in connection with their work. It is hoped that these inspections can be continued in the forthcoming year and regularly thereafter.

REPORT OF THE DIVISION OF LABORATORIES.

C. E. DOLMAN, M.B., B.S., M.R.C.P., D.P.H., PH.D., DIRECTOR.

INTRODUCTORY COMMENTS.

The year 1942 was noteworthy in the history of the Division for a marked increase in numbers of tests performed, in both main and branch laboratories; for an unusual number of staff changes; for difficulties in obtaining technical apparatus; and for the heavy extra loads imposed upon our facilities by the distribution of biologicals; and by the work undertaken for the Red Cross in connection with blood donations. To help meet these difficulties, the employment of one extra technician and of one extra cleaner was authorized; but at the year's end, owing to a dearth of suitably qualified persons for replacement of losses due to resignations or to illness, we found ourselves two technicians short of our allotment. Perhaps more serious than this impairment and shortage of staff, was an acute exacerbation of the chronic trouble which has beset the Division since its inception—namely, inadequate and unsuitable accommodation. The only available remedy was a repetition of last year's palliation, the acquisition by the Provincial Government of the fourth and last cottage in the row. After protracted negotiations the transaction was completed, and the processes of bolstering up the foundations, replacing its floors, strengthening its walls, equipping it with all the

plumbing and other services needed for its conversion into laboratories, and linking it to the other quarters, was under way early in December.

At the main laboratories tests performed during the year numbered 156,898, an increase of 22.3 per cent. over the 1941 total of 128,280. Tests performed on specimens reaching us from sources within the Greater Vancouver area alone equalled the previous year's total for specimens from all sources, but there was an even greater proportionate increase in specimens reaching us from sources outside the Vancouver area. Of all the tests, 28,775 or 18.3 per cent. related to out-of-town specimens, compared with 15.2 per cent. in 1941 and less than 10 per cent. in former years. This trend is welcome evidence of a greater awareness among out-of-town practitioners of the important diagnostic facilities available to the public through them from the laboratories. The numbers of tests performed in the Vancouver laboratories during 1942, with the comparative figures for 1941, are given in Table I.

The combined total for tests performed in the six branch laboratories at Victoria, Prince Rupert, Nanaimo, Kelowna, Kamloops, and Nelson also showed a marked increase. The Prince Rupert laboratory in particular deserves commendations for having almost quadrupled its turnover in the face of serious obstacles, while the Victoria total was almost double that of the previous year. The work of the branch laboratories will be summarized in a supplement to this report.

TESTS RELATING TO VENEREAL DISEASE CONTROL.

The upward trend was maintained in the numbers of specimens received for sero-diagnostic tests for syphilis. Over 64,000 blood specimens were tested in the main laboratories alone, an increase of 42.3 per cent. over the previous year's total. This very notable increase, predicted in the 1941 annual report, was attributable to the adoption by the R.C.A.F. early in the year of a policy of routine Kahn testing for all recruits; to an increasing tendency towards routine Kahn testing among other units of the Armed Forces; to the routine performance of the Kahn test upon all blood specimens received from donors attending the Red Cross Clinic; and finally, to an increasing awareness among employers as well as among the general public, of the importance of such blood tests. The laboratories have added to their statistical data bearing on the local incidence of syphilis, and it is gratifying to record that there is evidence that at present this disease is probably less prevalent in our Province than in many other Provinces and States of the North American continent.

During the summer a conference of Public Health Laboratory Directors and representatives of the Armed Forces was held in Ottawa, under the auspices of the National Research Council, to discuss the adoption of a uniform policy throughout Canada in regard to the performance and reporting of the laboratory tests for syphilis on specimens from the Armed Forces. It was therefore resolved at the conference that all public-health laboratories be asked to perform a Kolmer-Wasserman test in addition to the standard Kahn test on all blood specimens submitted from the Armed Forces, and giving a positive or doubtful reaction when tested with a hypersensitive antigen.

Owing to very short notice of the conference having been received, it proved impossible for the Director to attend. This was regrettable.

The advantages of uniformity throughout Canada promised by the general agreement reached at Ottawa outweighed all the disadvantages, and steps were taken during 1942 towards complete conversion of our serological procedures to those adopted by the conference. At the close of the year, all was in readiness for the new system to begin operating in the New Year on specimens reaching us from practising physicians and from the Division of Venereal Disease Control, as well as from the Armed Forces. Requisition and report forms will be revised, and a circular sent to the profession explaining the reasons for these changes.

All these new arrangements have had to be made during a year in which there was a record increase in numbers of blood specimens submitted, and in which resignations and illness of technicians affecting this particular department also reached a new high. Miss Allan, our serologist, and her team of technicians, deserve great credit for having successfully introduced such extensive changes despite many difficulties.

Microscopic and cultural examinations for gonococci showed no marked change in numbers. A promising arrangement was made between the Division of Venereal Disease Control and the Department of Bacteriology and Preventive Medicine at the University, whereby a graduate student was appointed to the staff of the Division to carry out certain duties at the clinic and to pursue bacteriological research relating to gonorrhœa at the University. A many-sided investigation into improved methods of culturing and identifying gonococci, and into the epidemiological significance of atypical gonococci, was launched, the results of which will be of considerable interest and importance to the laboratories. Reference was made in last year's report to the dilemma sometimes presented by the repeated isolation of atypical gonococci from persons with no clinical signs of gonorrhœa.

AGGLUTINATION TESTS.

An appreciable reduction occurred in the numbers of agglutination tests for typhoid and paratyphoid fevers, and for brucellosis (undulant fever). This is largely a reflection of the low incidence of enteric infections, with no major epidemics, during the year. The negligible number of requests for assay of dysentery agglutinins, for instance, is good evidence of a realization that the laboratory diagnosis of bacillary dysentery rests upon attempts to isolate the causal micro-organism from the fæces. For this educational development the laboratories are chiefly responsible.

CULTURES.

There was again a slight increase in the numbers of specimens cultured for *M. tuberculosis*. Cough plate cultures for whooping-cough (*H. pertussis*) more than doubled, a sign of keenness on the part of certain medical officers of the Metropolitan Health Committee which, coupled with the large amounts of pertussis vaccine distributed free during the year by the laboratories, goes far towards accounting for the low incidence of whooping-cough experienced in the period under review.

The numbers of cultures for *C. diphtheriæ* nearly trebled, in striking fulfilment of the prediction made in last year's report that the vast war-time movements of military and civil population would inevitably introduce into our midst numerous carriers of virulent diphtheria bacilli, with a consequent increase in the incidence of the disease, and an inevitably greater load upon the laboratories. Numerous small outbreaks of diphtheria occurred during the year which were scattered all over the Province, ranging from a series of cases and carriers discovered in a large Vancouver hospital to a sporadic outbreak among the Armed Forces at Prince Rupert; and from the west coast of Vancouver Island to the Kootenays. In all these outbreaks, the laboratories played a vital rôle, both from the standpoint of establishing the diagnosis and of identifying carriers, and also in the distribution of the appropriate biologicals for prevention and treatment. Several requests for emergency shipments of antitoxin were gladly met at considerable inconvenience to senior members of the staff; while Miss McDiarmid, the Bacteriologist in charge of this work, and Miss Kerr, Assistant Director, who gave valued help wherever the pressure was greatest, devoted many scores of hours of overtime work to coping with the kind of emergency represented, e.g., by the arrival of nearly two hundred nose and throat swabs daily for several successive days. Incidentally, the introduction of the tellurite medium in our diphtheria culture work has proved most helpful.

Cultures for hæmolytic staphylococci and streptococci increased by 50 per cent. over the previous year's total. This was largely due to a regulation of the Department of Defence respecting the compulsory throat-swabbing of food-handlers among the Armed Forces, with a view to excluding carriers of pathogenic streptococci, and of staphylococci capable of causing food poisoning, from the preparation and intimate handling of food.

Cultures for organisms of the typhoid-paratyphoid-dysentery group also showed a marked increase in numbers, 44 per cent. more being done than in the previous year. This striking increase was again largely due to a Defence Department regulation requiring a fæces examination of all food-handlers in the Armed Forces for exclusion of carriers of the above-named organisms. One consequence of this regulation was that requisitions for several hundred stool specimen containers reached the laboratories in the space of a few days. As only one technician was available for this work, and she could not satisfactorily cope with more than an average of twenty or thirty stool cultures daily, a very drastic scaling down of these requisitions was necessary. Eventually the main part of this task was accomplished. The value of the work to the Armed Forces is indicated by the fact that in one period of six months alone, in which 671 stool specimens from Army food-handlers were examined, eight positive cultures were obtained from ostensibly healthy persons. Two were carriers of *S. typhi*, three of *S. typhi murium*, and three of *Shig. dysenteriae Flexneri*.

Just as this work reached a peak, Miss D. E. Helmer, the Bacteriologist in charge of it, was offered and accepted a position with the Department of Pensions and National Health as Bacteriologist at the Kamloops branch of the Laboratory of Hygiene. We were fortunate to be able to retain the services of Mrs. Hardy (née McKellar) who had resigned on account of marriage, but was both trained and ready to tide us over a difficult situation by taking on this work until suitable substitutes for her were available.

MILK AND WATER EXAMINATIONS.

Little improvement was noted in the milk-supply situation of the Province from the standpoint of laboratory tests of bacterial content. Numerous instances came to our attention of raw milk being distributed with grossly excessive bacterial counts, while commencement during the year of the routine application of the phosphatase test to dairies distributing pasteurized milk in the Vancouver area showed that the pasteurization process was by no means always efficiently carried out. The incidence of high titres of *Brucella* agglutinins in the whey of raw-milk samples from the City of Vancouver supplies showed no decline. This evidence of the continued widespread distribution of Bang's disease among the Fraser Valley cattle received further support from the isolation of *Br. abortus* from the blood-stream of several human cases of acute brucellosis living in the lower mainland area, while an additional number of probable cases were revealed by the results of blood-agglutination tests. There is urgent need for a far more stringent and effective system of dairy-farm inspection throughout the Province and for improvements in the Acts and by-laws relating to the distribution of milk and milk products.

Miss V. G. Hudson, Bacteriologist in charge of milk and water examinations, was called upon to carry out an increased number of bacteriological examinations of water samples from the City of Vancouver and adjacent municipal supplies, from private wells, and also from common carrier supplies, the latter being sent in by the District Engineer of the Department of Pensions and National Health. The reports on these common carrier supplies, conscientiously made by a skilled worker, formed the basis for the chlorination order issued in the autumn by the Dominion Government, acting under the "War Measures Act," to several Pacific Coast cities, including Vancouver. This is not the occasion for further comment on the altogether deplorable and unworthy

controversy stirred up as a result of the intransigent attitude of certain local officials, and of the prejudice and ignorance of some of the public posing as authorities on sanitation problems. Let it suffice to restate the plain facts: that for several years the results of bacteriological tests on Vancouver's water-supply have not met International requirements. It has never been claimed by the laboratories that disease-producing bacteria had been isolated from this water-supply. If such isolation had been possible, a most serious outbreak of water-borne infection would have undoubtedly followed. As a matter of fact, it is rarely possible to isolate disease-producing bacteria from a public water-supply, even when sufficient organisms are present in the water to cause an epidemic among its consumers.

International bacteriological standards for public water-supplies are therefore not concerned with demonstrating that the supply in question be free from disease-producing organisms; but rather with showing no evidence of heavy pollution with bacteria of a type found in the human or animal intestine. The International standards do not impose upon the laboratory the impossible task of differentiating between the the organisms present in human and animal excreta; they regard the finding of such organisms in relatively small volumes of a water sample as presumptive evidence of pollution of a kind which, under given circumstances, might give rise to a water-borne epidemic. These required circumstances are that a case or carrier of some excreta-borne disease, such as typhoid fever or dysentery, should enter the watershed, and pass excretions therein whose bacterial content would eventually emerge from the city water-taps. Chlorination effectively prevents such a contingency; and the known fact that trespassers *do* enter the watershed, quite apart from the readiness with which bacterial pollution could be brought about by enemy agents, makes of chlorination a prime necessity now, and a basic amenity for any up-to-date city after the war. The Director, despite the recriminations heaped upon him in the course of the chlorination controversy, is convinced of the rightness of his stand on this issue. When Vancouver citizens have failed to detect any change in their water following chlorination, and begin to realize that their unchlorinated supply had been a unique example among North American cities of this size, and in this generation, of falsely-conceived immunity from water-borne epidemics, the recriminations may possibly be replaced by regrets.

DISTRIBUTION OF BIOLOGICALS.

The amounts of the various biological products distributed by the laboratories on behalf of the Provincial Board of Health are set forth in Table III. on page 57 of this report. The table shows that over 80,000 persons were actively immunized against smallpox, diphtheria, scarlet fever, whooping-cough, or typhoid and paratyphoid fevers. While about two-thirds of this total represents persons receiving smallpox vaccine or diphtheria toxoid, the fact that nearly 30,000 during the year received protection against scarlet fever, whooping-cough, or typhoid and paratyphoid fevers is a very encouraging augury for a future low incidence of these communicable diseases in British Columbia. The total of single-person immunizations against one or other of the above diseases was nearly double the corresponding figure for 1941.

Included in this year's total are nearly 2,500 persons who received a combination of typhoid-paratyphoid vaccine and tetanus toxoid, or tetanus toxoid alone. These products were made available, after consultation with the Provincial Health Officer and with the Director of Connaught Laboratories, in order to encourage the general public, and more especially doctors, Public Health Nurses, A.R.P. workers, and Red Cross and St. John Ambulance Brigade personnel, to acquire active immunity against tetanus in case of wounds resulting from air-raids. An enthusiastic response at the outset became rather lukewarm towards the end of the year, no doubt as a reflection of the improving war outlook.

The Province at large more than kept up with the demand for these products, when compared, on a population basis, with Vancouver. This was particularly true of two products, scarlet fever toxin and T.A.B. vaccine, which should be far more widely used in the Vancouver area.

The amounts of products distributed for testing susceptibility, and also for passive protection against diphtheria, scarlet fever, and tetanus showed definite, though less marked increases; while the units of antitoxins distributed for treatment of diphtheria and scarlet fever were about double the corresponding figures in the preceding year. This must be ascribed to the numerous outbreaks of diphtheria and scarlet fever. The antitoxins used in treatment are far more expensive, and less efficient, than the products used in prevention, and these upsurges in the incidence of diphtheria and scarlet fever are the best argument for even greater distribution of diphtheria toxoid and scarlet fever toxin in future. The enthusiasm of physicians and Health Officers for prophylactic biologicals in 1942 far exceeded expectations, and this fact, coupled with the unexpected war-induced need for tetanus toxoid, and with an unusual number of outbreaks of diphtheria and scarlet fever, caused the appropriations available for purchase of these supplies to be overstepped. There can be no more economical investment of community funds than in this free distribution to authorized persons of approved biological products for the prevention of communicable disease.

Early in the year the laboratories ceased preparing convalescent measles serum, an arrangement having been effected with Connaught Laboratories whereby supplies could be obtained from them for free distribution by us to physicians, according to the policy followed for other biologicals. The comparative freedom of the Province from measles during the year cannot be anticipated next year, when we shall reap more benefits from being relieved in this way of the necessity of maintaining supplies of measles serum collected from local sources.

Complete records are available in the laboratories of the amounts of biologicals supplied to various physicians throughout the Province. All requisitions have been carefully scrutinized and excessive orders revised; while a great improvement has been brought about in the percentage of outdated products returned. Physicians who find they have ordered unnecessarily large quantities as a rule return these now for redistribution by the laboratories before the expiry date is reached. This work has entailed a heavy load upon the office staff, and has been most efficiently handled by Mrs. Allen.

RED CROSS BLOOD DONATIONS.

The contribution which the main laboratories volunteered to make towards the collection and shipment of human blood serum for eventual transfusion into personnel of the Armed Forces, and also civilians, was greatly extended during the year. The success of the Canadian Red Cross effort in this regard in British Columbia is completely dependent upon the capacity and good-will of the staff of the Provincial Laboratories, and of those among their friends who have so kindly volunteered their assistance. The attendance of donors at the clinics increased during the year from less than 100 weekly to over 250 weekly, and it is hoped that during 1943 up to 500 donations weekly may be reached.

Three bottlenecks against an increasing turnover have existed from the outset of this work, all of them involving the laboratories; namely, lack of accommodation, a diminishing supply of volunteer help, and serious delays in the obtaining of essential equipment. To alleviate in some fashion this lack of accommodation (as well as to provide a much-needed chemistry laboratory, a library, and a room for the night watchman), purchase of the fourth cottage adjacent to the laboratories was arranged by the Hon. G. S. Pearson, Provincial Secretary; and by the end of January, 1943, it is expected that the new space will be in full use. A splendid spirit has been shown by

many members of the laboratories' staff who have given freely of their time on clinic evenings, sometimes staying until after midnight to perform certain essential procedures on the bottles of blood sent up by the clinic. Two full-time technicians are now provided by the Red Cross, but they could not possibly have managed without the help volunteered by members of our own staff, and also by several ladies who have regularly assisted throughout the year with such tiresome but essential tasks as decanting blood clots, assembling and disassembling glass and rubber tubing, and wrapping individual rubber stoppers in brown paper. Increasing difficulties were experienced in obtaining equipment of all kinds. Endless applications for priorities became the order of the day, and numerous disappointments faced us, especially in connection with some major items of equipment needed for this blood-work, such as centrifuges for separating the sera from the clots and refrigerators for storing the pooled serum prior to shipment. However, we intend to overcome all these difficulties somehow, and to fulfil our quota.

The literally life-saving properties of human blood serum transfused into injured persons suffering from surgical shock have now been well publicized, and we shall not elaborate on this theme. It should give great satisfaction to all who have been associated with this work in any capacity to know that during 1942 no less than 9,260 donations from 7,960 donors were treated and pooled in the laboratories, so that about 300 gallons of blood serum could be shipped to the Connaught Laboratories for conversion into a dried powder ready for immediate use, when reconstituted by addition of water on the field of battle, whether in the front line or in bombed cities. This quantity of serum represents sufficient for over 5,000 transfusions. This work throughout the year was under the excellent supervision of Miss M. Malcolm, Chief Bacteriologist, who not only maintains a fine spirit among a somewhat heterogeneous group working under difficulties, but also exercised such effective control over techniques that not one donation had to be discarded through contamination. The Director has been informed that this constitutes a unique record even among centres forwarding whole blood to Toronto, and of course the risks of contamination are much increased by the process of separating the serum.

GENERAL COMMENTS.

The staff numbered twenty-five, and was comprised of a Director, Assistant Director, and Chief Bacteriologist; three Bacteriologists, one Serologist, and six Technicians; two media-makers, three office staff, six cleaners, and one night-watchman.

Resignations on account of marriage were received during the year from Miss P. McDaniel, Stenographer-Bookkeeper; Miss F. H. Gardiner, Stenographer; and Miss N. S. Duns, Secretary-Clerk. Miss D. E. Helmer, Bacteriologist, resigned to take an appointment with the Dominion Laboratory of Hygiene, and Miss R. Sherman, Technician, accepted a position with our branch laboratory at Victoria. We are glad to place on record our cordial appreciation of the different services so efficiently performed by all the foregoing for periods of several years in some instances. Additions to the staff included Miss H. Chang and Miss M. Cunningham as Technicians; Miss N. Lamb and Miss I. Robertson as Record Clerks; and Miss C. Olafson, Miss F. Howse, Miss D. Ross, and Miss K. Baker as Cleaners. Appointment of Miss E. Rushworth as full-time Technician in the employ of the Division at the Prince Rupert branch laboratory was also arranged; while Mrs. M. J. Lunson was the Technician appointed by the Red Cross to work under our direction at the laboratories. To all of these newcomers our best wishes for happy employment are extended.

During the year the Director addressed several professional and lay groups, including the Laboratory Section of the Western Branch, American Public Health

Association, at Seattle, the Pasteur Society of California at San Francisco, and the Laboratory Section of the Canadian Public Health Association at Toronto, on the subject of "Food Poisoning"; the Junior Board of Trade of Vancouver and the Vancouver Medical Association on the chlorination of water issue; and the Vancouver Rotary Club on "Blood as a Weapon of War." In association with Dr. Ranta, the Director also presented a paper to the Laboratory Section of the Canadian Public Health Association, entitled "Observations on the Preparation of Cholera Vaccine." His Chairman's address of the preceding year to this meeting was published under the title "The Changing Place of the Laboratory in Public Health" (Canadian Public Health Journal, May, 1942).

Very satisfactory relations obtained throughout the year with the medical profession, with various divisions of the Provincial Board of Health, with professional members of the Metropolitan Health Committee of Greater Vancouver, and also with the medical officers of the Armed Forces. Co-operation with the University Departments of Bacteriology and Preventive Medicine, and of Nursing and Health, and also with the Western Division of Connaught Laboratories was close and fruitful. Following the outbreak of shell-fish poisoning due to *gonyaulax catanella* in the early summer, for instance, numerous samples of water were sent in for examination. Most of these examinations were carried out by a graduate student working under Dr. Dolman's direction in the Department of Bacteriology and Preventive Medicine at the University. Again the laboratories remain wholly dependent upon this Department and Connaught Laboratories for supplies of sheep-blood, demands for which have greatly increased with the adoption of the complement-fixation test for syphilis. Several members of the staff attended the seminars held on bacteriological topics at the University during the spring term. On the other hand, senior students in Bacteriology, and also the Public Health Nursing class, made profitable visits to the laboratories. Miss D. E. Kerr gave two demonstrations to the nurses of laboratory outfits, methods of taking specimens, etc., which were especially appreciated. One cannot make this reference to Miss Kerr without adding that she has continued to display her ready competence and unquenchable energy in the carrying-out of her many responsibilities as Assistant Director.

In concluding, the absurdly unsuitable and unsafe quarters of the main laboratories in Vancouver must again be emphasized. It is realized that little can be done about construction of a suitable building at this time, not only because of dearth of materials and equipment, but also because a move now would cause too great a disruption of the laboratories' daily activities to permit the health of the community to be maintained at a level for which, in the nature of things, we seldom receive due credit. The scientist is by nature not a publicist, and the amenities and considerations granted to this group of highly-skilled technical workers are in accord with the impersonal and anonymous nature of their work. Money can always be found to construct new buildings for the sick or for the mentally deranged; but we are compelled to carry out work of vital importance to public health in quarters which never fail to evoke astonished protests from all who know the quality of our work. Perhaps it is not too much to hope that high on the list of post-war construction projects designed to further the health and welfare of the people of this Province may be placed the Institute of Preventive Medicine at the University, in the plans for which the headquarters of this Division featured prominently.

THE WORK OF BRANCH LABORATORIES.

Six branch laboratories continued operating during the year under the auspices of the Division at Victoria, Prince Rupert, Nanaimo, Nelson, Kamloops, and Kelowna. The total numbers of tests performed by them are shown in Table II., from which it is apparent that as a group they performed 71,182 tests as compared with 38,753 in the

previous year. This remarkable record was chiefly due to a more than doubled total at Victoria, and an almost quadrupled total at Prince Rupert. The Nelson laboratory also handled a 42-per-cent. increase, and there was a small increase at Kamloops. The Nanaimo laboratory maintained its total at the previous year's level, while at Kelowna there was a 19-per-cent. decrease.

VICTORIA.

The very marked increase in the work of the Victoria laboratory was primarily due to the considerable work involved by the Headquarters of the Pacific Command being located in this city for the greater part of the year, large detachments of all branches of the Armed Forces being consequently stationed in the vicinity. Heavy increases in laboratory-work relating to the diagnosis of venereal disease accounted for most of the higher total; and it may be noted here that the monthly returns received from the Director, Dr. G. A. McCurdy, suggest a greater relative incidence of positive tests for syphilis and gonorrhœa among the Armed Forces stationed in Victoria and vicinity than among similar groups stationed in the Vancouver area. Copies of these returns are forwarded by the Director of the Division to the Division of Venereal Disease Control, which thereby receives valuable evidence as to the incidence of syphilis and gonorrhœa in the Victoria area, supplementing similar information sent to that Division, respecting positive specimens received from the Vancouver area.

At the end of the year, Miss Ruth Sherman, B.Sc., who had been a Technician in the Vancouver laboratories for nearly three years, was appointed as a Senior Technician to the staff of the Victoria laboratory. This transfer should lead to a further standardization of the procedures used at the Victoria laboratory in terms of those used in the main laboratories.

PRINCE RUPERT.

The extraordinary increase in the Prince Rupert work was again chiefly due to large establishments of the Army and R.C.A.F. in the vicinity, which involved the performance of several hundred routine Kahn tests each month, as well as the handling of the intensive laboratory-work which inevitably follows the occurrence of, e.g., cases of diphtheria among a group of men in the Armed Forces. Again, the astonishing activities incidental to the construction of the Alaska Highway and the establishment of an American hospital unit at Prince Rupert to serve those engaged on this project brought its inevitable quota of laboratory work. Finally, the setting-up of a full-time Health Unit at Prince Rupert by the Provincial Board of Health also entailed more work for the laboratory; but Dr. R. J. Macdonald, Director of the Unit, proved not only most co-operative and helpful to Dr. R. E. Coleman, who was in charge of the Prince Rupert laboratory, but also at times was able to give valued advice to the Director of the Division. Owing to its geographical situation and to the strategic importance of maintaining efficient public-health laboratory facilities serving the Prince Rupert area in particular and Northern British Columbia in general, it was realized that special arrangements would have to be made to ensure continuity of the work started only three years or so ago by Dr. Coleman. A full-time Technician, Miss Eileen Rushworth, B.A., was therefore appointed by the Provincial Board of Health to work in the Prince Rupert laboratory under Dr. Coleman's direction, commencing June 15th, 1942. Miss Rushworth's salary is paid wholly from the Division of Laboratories' vote, and the scope of her duties and responsibilities are defined by the Director of the Division. Before leaving for Prince Rupert, Miss Rushworth worked for two or three weeks in the Vancouver laboratories, familiarizing herself with the techniques used there. Her appointment has proved very successful, and it is hoped that as circumstances permit similar arrangements may be effected elsewhere, so that a clearer differentiation may be effected between the public-health laboratory-work and the clinical-pathological tests

also performed by the branch laboratories. Dr. Coleman and Miss Rushworth both merit special commendation for having coped so satisfactorily with a situation which at times was very trying. Their work has more than justified the establishment of the branch laboratory at Prince Rupert, and it is hoped that the value of its work to the community and the hospital will eventually receive the local recognition it deserves.

NELSON, KAMLOOPS, KELOWNA, AND NANAIMO LABORATORIES.

The remaining branch laboratories require no special comment, as they were not affected to nearly the same degree by war-time exigencies. The Nelson laboratory suffered at the end of October the loss of its Director, Dr. F. P. Sparks, who left to take a position as Assistant Pathologist at the Vancouver General Hospital. Dr. R. B. Brummitt, who proved an efficient Acting Director during Dr. Sparks' leave of absence from his duties at the Kootenay Lake General Hospital, very kindly agreed to continue to direct the work of the Nelson branch laboratory.

The Kamloops laboratory suffered a serious loss in the resignation of Miss F. Armstrong, who became Senior Technician in the laboratory of the Division of T.B. Control at Vancouver. Miss Armstrong had given many years of highly satisfactory service to our Division, and her leaving added considerably to the responsibilities of the Director, Dr. A. G. Naismith.

The decreased turnover at the Kelowna laboratory was solely attributable to the poor health of the Bacteriologist, Mr. F. Smith, who was unfortunately off duty for part of the year, and on half-time for the remainder of the period. Much of the increased work that would have otherwise reached the Kelowna laboratory, especially from the near-by military camp at Vernon, had therefore to be diverted to the main laboratories in Vancouver. Despite these difficulties, excellent work was done under the direction of Dr. J. M. Hershey, whose expanded sphere of jurisdiction as full-time Director of the Okanagan Health Unit should eventually present a need for a much expanded public-health laboratory service in that area.

Mr. George Darling, who operates the branch laboratory at Nanaimo in greatly improved quarters in the new wing of the hospital, was likewise subject to many increased demands, particularly from the military hospital established there. Owing to the proximity of Nanaimo to Vancouver, however, it was comparatively easy to arrange for diversion of those specimens (especially blood specimens for routine tests from the military hospital) which were beyond Mr. Darling's capacity to handle.

To the Directors and technical personnel of all the foregoing branch laboratories, the Director of the Division desires to record his indebtedness for a year of cordial co-operation and most satisfactory effort.

TABLE I.—STATISTICAL REPORT ON EXAMINATIONS DONE DURING THE YEAR 1942.

Examination.	Out of Town.	City.	Total in 1942.	Total in 1941.
Animal inoculations	54	255	309	253
Blood agglutinations—				
<i>B. typhosus</i> —				
Flagellar "H" antigen	236	1,103	1,339	1,870
Somatic "O" antigen	236	1,102	1,338	1,870
<i>B. paratyphosus</i> (A)	233	1,101	1,334	1,883
<i>B. paratyphosus</i> (B)	235	1,101	1,336	1,870
<i>B. dysenteriae</i> (Shigæ)	2	17	19	32
<i>B. dysenteriae</i> (Flexneri)	2	17	19	32
<i>B. dysenteriae</i> (Sonne)	2	17	19	39
<i>Br. abortus</i>	234	1,101	1,335	1,885
Miscellaneous	9	8	17	14
Cultures—				
<i>M. tuberculosis</i>	96	308	404	385
Typhoid-paratyphoid-dysentery group	881	789	1,670	1,155
<i>H. pertussis</i>	1	84	85	38
<i>C. diphtheriae</i>	470	9,156	9,626	3,363
Hæmolytic staphylococci	424	4,075	4,499	3,065
Hæmolytic streptococci	424	4,075	4,499	3,065
Gonococcus	425	3,552	3,977	3,619
Miscellaneous	88	272	360	522
Direct microscopic examinations for—				
Gonococcus	1,482	16,379	17,861	17,812
<i>M. tuberculosis</i> (sputum)	1,097	5,861	6,958	7,296
<i>M. tuberculosis</i> (miscellaneous)	177	185	362	458
<i>Treponema pallidum</i> (dark-field)	12	140	152	182
Vincent's spirillum	17	358	375	346
Tricophyton (ringworm)	1	42	43	86
Helminths (parasites)	18	54	72	71
Serological tests for syphilis—				
Blood—				
Presumptive Kahn	832	4,517	5,349	-----
Standard Kahn	13,729	50,368	64,097	45,029
Hinton	2,225	8,434	10,659	11,965
Kline	1,668	4,115	5,783	6,406
Cerebrospinal fluid, Kahn	320	1,293	1,613	1,921
Cerebrospinal fluid—				
Routine	286	715	1,001	1,293
Colloidal reaction	314	1,261	1,575	1,865
Milk—				
Bacterial counts	269	1,476	1,745	1,989
Coli-ærogenes	269	1,476	1,745	1,997
Br. agglutinins	201	384	585	311
Phosphatase tests	32	710	742	-----
Water—				
Total bacterial counts	-----	846	846	837
Coli-ærogenes	1,482	831	2,313	1,843
Differential counts	-----	-----	-----	658
Special examinations	20	221	241	305
Miscellaneous tests	119	290	409	348
Antigens distributed—				
Kahn	100	-----	100	24
Hinton	15	-----	15	3
Bacterial	29	-----	29	-----
Convalescent serum distributed—				
Measles	9	34	43	275
Totals	28,775	128,123	156,898	128,280

TABLE II.—NUMBERS OF TESTS PERFORMED BY BRANCH LABORATORIES IN 1942.

Type of Test.	Kamloops.	Kelowna.	Nanaimo.	Nelson.	Prince Rupert.	Victoria.	Totals, 1942.	Totals, 1941.
Animal inoculations.....	56	163	626	180	29	333	1,387	1,220
Blood-agglutination tests.....								
Milk samples—								
Bacteriological examinations.....	53		86	127	138	908	1,312	1,304
Chemical examinations.....		917	57	60			1,034	1,486
Water samples—								
Bacteriological examinations.....	62	536	76	136	202	190	1,202	1,440
Cultures—								
Gonococcus.....						572	572	2,077
Typhoid.....	2	69		13		513	597	492
Diphtheria.....	44	51	48	18	1,291	288	1,740	268
Haemolytic staphylococci.....								6
Haemolytic streptococci.....		7		352		1,727	2,086	879
Miscellaneous cultures.....		3	8	1	21		33	80
Direct microscopic examinations for—								
Gonococcus.....	377	50	389	285	1,390	5,585	8,076	4,158
M. tuberculosis bacillus.....	439	110	553	504	412	4,459	6,477	6,643
Vincent's angina.....	37		8	34	214		293	275
Kahn and Hinton tests for syphilis.....	2,244	673	2,498	1,873	4,946	*33,184	45,418	17,123
Spinal fluid—								
Kahn.....	4	17	66			431	518	675
Routine.....		2	130	39			171	252
Colloidal gold.....			62				62	91
Other miscellaneous tests.....		136	8	25	35		204	284
Totals, 1942.....	3,318	2,734	4,615	3,647	8,678	48,190	71,182	38,753
Totals, 1941.....	3,110	3,378	4,638	2,708	2,382	22,537		

* Including dark-field examinations.

TABLE III.—SUMMARY OF BIOLOGICAL PRODUCTS DISTRIBUTED FREE BY THE PROVINCIAL BOARD OF HEALTH THROUGH THE DIVISION OF LABORATORIES, 1942.

	Greater Vancouver Metropolitan Health Area.	Remainder of Province.	Total.
Products for active immunization (total immunization series distributed)—			
Smallpox vaccine	8,403	19,112	27,515
Diphtheria toxoid	9,134	15,780	24,914
Scarlet fever toxin	549	12,152	12,701
Pertussis vaccine	3,008	5,018	8,026
T.A.B. vaccine	528	4,140	4,668
T.A.B. vaccine and tetanus toxoid*	345	2,115	2,460
Tetanus toxoid*	71	125	196
Totals	22,038	58,442	80,480
Products for testing susceptibility (single test doses distributed)—			
Schick test material	1,100	3,675	4,775
Dick test material	570	3,105	3,675
Diphtheria reactor material	80	1,400	1,480
Totals	1,750	8,180	9,930
Products for passive prophylaxis (single prophylactic doses distributed)—			
Diphtheria antitoxin	28	275	303
Scarlet fever antitoxin	108	310	417
Tetanus antitoxin	117	353	470
Totals	253	938	1,190
Antitoxins for treatment (total antitoxic units distributed)—			
Diphtheria antitoxin	640,000	9,270,000	9,910,000
Scarlet fever antitoxin	108,000	2,934,000	3,042,000
Perfringens (gas gangrene antitoxin)	400,000	400,000
Totals†	748,000	12,604,000	13,352,000

* Since July 1st, 1942, only.

† In addition, 125 20-cc. packages of anti-meningococcus serum were distributed to the Province at large.

SUMMARY REPORT OF THE DIVISION OF VENEREAL DISEASE CONTROL.

D. E. H. CLEVELAND, M.D., ACTING DIRECTOR.

INTRODUCTION.

The Director began the introduction of his report for 1941 in the following words: "Upon no service of Government does there fall a greater responsibility than upon that of the Division of Venereal Disease Control. The Division is entrusted by the citizens of British Columbia with the direction of the strategy against those insidious enemies of the public health—syphilis and gonorrhœa."

These words have lost nothing in force or significance in the past year, and they are repeated for the sake of emphasis. The report to the people of the Province is made each year, not only to give an account of stewardship but also as a part of the educational activities of the Division. On the matter of education there is more to be said later, but it is to be observed here, that for success in the campaign to control venereal disease, education of every section of the public, lay and professional alike, is an essential requirement.

The progress made in reducing the amount of venereal disease in the preceding four years, especially the number of new cases reported, as shown in last year's report, was astonishingly good. The reduction in new cases of syphilis reported in that period

was 52 per cent., and while figures relating to gonorrhœa were not as complete as could be desired, those obtainable showed a reduction in the same period of approximately 20 per cent. The advance has not slackened in 1942, although no spectacular figures covering one year could be expected. This year, however, marks the culmination of a "five-year plan" and the proportional reduction given for the four-year period terminating in 1941 was substantially that for the five-year period.

The increased military and industrial activity on the Pacific Coast has necessarily increased the work of the Division, and one of the direct results has been the opening of the Prince Rupert Health Unit. This was set up in June of 1942 as a joint effort between the Provincial Board of Health, the Department of Pensions and National Health, and the Municipal Corporation of the City of Prince Rupert. It is roughly estimated that the population of Prince Rupert, which before the war was 6,500, has been augmented by many units of the armed forces, 1,500 dry-dock workers, and 1,500 men engaged in construction, with many dependents and others.

This Unit so far has been operating as a treatment centre for venereal disease infections, distributing necessary drugs to local physicians, and carrying out local epidemiological investigations. In the latter connection the co-operation of the local detachment of British Columbia Police has been excellent. The remarks of the Director of the Prince Rupert Unit with reference to Indians are of particular interest and merit further consideration. He observes that Indians do not constitute an alarmingly great proportion of venereal disease cases or alleged sources. It is, of course, evident that the local female Indians have a much higher infection rate than the local white women, but the problem is not as serious as it is made out to be in some quarters.

One of the by-products of this period of activity and gain has been one which was perhaps more notable than had been anticipated and shows that the benefits of the work accomplished in British Columbia have been extended to the public far beyond the boundaries of this Province. The public-health workers, especially those concerned with venereal disease control, all over the continent have had their attention drawn to British Columbia, whose venereal disease control programme has achieved International fame. Hands of other workers have been strengthened by the success gained in British Columbia; they have initiated or amplified programmes of their own on the strength of what they saw could be done as exemplified here and this Province's programme has been given wide publicity through channels reaching the public outside the professional field. For instance, the magazine "Newsweek" referred to the Division and its Director by name, in a paragraph published early in the year. Also an offer was received from the Government of the Commonwealth of New Zealand to purchase a copy of the educational film "Nine Cents Per Capita," which film was the product of the Division. With the approval of the Provincial Health Officer, it has been arranged to make a donation of this copy to the New Zealand Government.

PUBLIC EDUCATION.

There is a unique feature about venereal diseases in that prevention and treatment have the force of synonymous terms. If every person with venereal disease already in, or entering into a given community could be detected at once and treated until rendered non-infectious, venereal disease would disappear in that community. The means to do this are at hand. It remains only to utilize them fully. There is no completely reliable prophylaxis other than treatment of every case until non-infectious.

For an adequate functioning of the venereal disease control programme, education first and legislation second (but hand-in-hand with it) are prime essentials. Education of the public through every possible approach to eye and ear, as to what venereal disease is and what it is not, and what can, should, and must be done about it; education of the

legislators and those whose duty it is to enforce the laws; education of the medical and nursing professions so that they can most intelligently and efficiently perform their functions in dealing with venereal disease and become in turn educators of their venereally infected patients; finally, education of the infected patient. Each of the four classes into which the population has thus arbitrarily been divided must act with, react and interact upon each of the others and present a solid and coherent front. Those traitors who betray the health of the public by making a profitable organized business out of prostitution cannot survive under such a unity of instructed effort.

The educational programme in 1942 has been extended by various means and the physician in charge of education and his associates have been very active. Two special programmes have been developed. The first was a "Prevent Prenatal Syphilis" campaign, designed to reduce this preventable scourge as rapidly as possible. The problem was attacked from two angles—e.g., professional and the public. Several personal letters were written to 750 doctors in the Province, 3,000 nurses, 1,200 school-teachers, and some 500 women's organizations. In addition, the press, radio, and window displays were freely used. Special pamphlets were written and during the year approximately 48,275 pieces of literature were distributed in this one programme. Its success can be partially judged by the fact that several States and Provinces have already written us requesting complete details.

The Armed Forces programme was developed in the past seven months after many conferences with the Army, Navy, and Air Force personnel, who gave us complete co-operation. It includes special lectures for the enlisted men on venereal disease, special pamphlets and films. All have been well received and to date the three forces have requested over 73,195 pieces of literature.

In addition, in co-operation with Colonel Wilson, Command Medical Officer, Military District No. 11, two courses of study of venereal disease have been prepared, one for medical officers and the other for non-commissioned officers. They include all phases of venereal disease control; e.g., laboratory procedures, scientific treatment methods, epidemiology, organization, education, and specialized reading.

A rather paradoxical situation has confronted the Division in being faced with, on the one hand, a problem accentuated by war-time conditions and, on the other hand, a need and desire to conform to stringent war-time economies. Fortunately there is a rapidly growing recognition that an educational programme of this type is not a "frill" but a very essential war-time service. By careful planning it has been possible to provide this Province with a quite adequate programme consonant with limitations of personnel and funds. This policy of careful planning will do more than assure the taxpayers of maximum economy, and will provide a programme designed to aid the war effort to the fullest extent.

One of the most challenging problems associated with the development of the venereal disease educational programme was met successfully during 1942. The problem—one of long standing—involved the educating of senior high school students to an understanding of the essential facts about venereal disease and its control. A technique was developed for presenting this information in an interesting and objective manner. After submitting a brief, outlining this technique, to the Hon. the Minister of Education, approval was granted for its introduction, officially, to the senior high schools. Without exception, to date, the results have been highly satisfactory.

A marked improvement in the general attitude towards the venereal disease problem was very much in evidence. Of perhaps greatest significance was the request from the Canadian Broadcasting Corporation to the Provincial Health Officer that he deliver a radio talk on venereal disease as a war-time problem. This was given in April as part of a "War-time Health" series broadcast over the national hook-up.

The Division's policy of donating copies of appropriate volumes (such as "Shadow on the Land," "Plain Words about V.D.," etc.) to public libraries was expanded to include strategically located private lending libraries. A special book-jacket was prepared for this purpose.

The constant effort of the Division to make available to the public the most suitable and useful literature resulted in the adoption of a new booklet "Facts about Syphilis" as the principal medium for providing general factual information. This booklet was prepared and released originally by the Metropolitan Life Insurance Company, through whose courtesy reprint rights were obtained.

A sounder basis for preparation and distribution of news releases was established during 1942, and the personal co-operation of many editors assured.

A new film produced for the American Social Hygiene Association was purchased by the Division. Its title is "Health is a Victory" and it deals with the problem of gonorrhœa control in much the same fashion as syphilis is dealt with in "With These Weapons."

Of special interest to the Division was the release of a commercial film, "No Greater Sin," which was booked by a number of theatres throughout the Province. The co-operation of the distributors and exhibitors was secured by their permission to allow the Division to place in the foyer of the theatre a specially-prepared display board, and through the distribution of selected literature to their patrons.

MEDICAL AND NURSING SERVICES.

In addition to the clinics in Vancouver and Victoria, there have been treatment centres operated in New Westminster, Prince Rupert, and Trail, as well as service to the male and female inmates of Oakalla Prison Farm. The free supply of drugs, chiefly arsenicals and bismuth for syphilis and sulphathiazol for gonorrhœa, to private physicians both in urban and rural districts who report cases coming to them for treatment has been maintained. The consultant staffs of the Vancouver and Victoria clinics have continued to receive numerous requests for consultative assistance from doctors with cases presenting special problems. In 1942 there were 1,150 consultations of this type. A notable and laudable feature of the work of doctors in smaller centres has been especially in evidence lately. Several of these have stepped out of their usually accepted rôle and interested themselves in epidemiological problems relating to venereal disease in their own communities. They have voluntarily sent in to us information which they felt would be of value. Such action on their own initiative is indicative of their public-spirited attitude and grasp of the principles of preventive medicine.

There has been an almost complete turnover of the Vancouver medical staff, including the Director, in the past year, so that the Acting Director remains as the only one of the original medical staff as it existed five years ago. All of those who have recently been lost have entered into the greater sphere of the Armed Forces of the Nation. The nursing service of the Vancouver clinic has lost all its male members and the women who remain have been obliged to operate under extra burdens.

The day clinics have become larger, except on Wednesday morning, and as a result of an increase in general employment the Monday night clinic has been much heavier. The figures for the entire year have not been available in time to include in this Report. One important and unfortunate result of shortage of personnel and time has been that it is usually impossible to carry out complete clinical examinations at the first visit of a new patient. The laboratory report taken without correlation to clinical findings has sometimes indicated the necessity for a recheck and clinical examination, while the further attendance of the suspected individual has proved impossible to secure or at best only after prolonged delay.

Since July 1st, regular interne service has been unobtainable. This has necessitated discontinuing treatment on all afternoons, except Thursday, which has been kept open for domestic employees. This has not lightened the burden appreciably on the nurses, since many duties such as teaching student nurses and U.B.C. graduate students, record-keeping and epidemiological work have been assumed by them. These added loads have, however, been cheerfully accepted in the spirit of sacrifice which war should impose on all.

The New Westminster clinic and the male clinic at Oakalla Prison Farm have been operated by the Travelling Consultant. That at New Westminster is regarded as a model small clinic; case-holding is good, lapses are few, spinal examinations average 100 per cent. and the general co-operation between patients and staff is excellent. The volume of work remained about the same, total attendance for the year being approximately 2,100.

At Oakalla, in addition to the actual treating of venereal disease, a good public-health work has been carried out during the year. All new admissions have had blood Kahns, and "repeaters" have been rechecked at intervals.

During June, July, and August a venereal disease clinic was organized and operated by the Travelling Consultant for the British Columbia Security Commission to treat Japanese interned there. Through this it was possible to contact all Japanese in British Columbia suffering from venereal disease and to outline future treatment for them regardless of where they were located.

EPIDEMIOLOGY AND WELFARE.

Despite the increased burden on the social workers as a result of the loss of several members of the Epidemiology and Welfare staff to the Armed Forces, the work of this section has made notable forward strides. The results of the year's activities show that the exhaustive methods of source-finding and case-holding have produced encouraging results.

More emphasis was placed on the "Process of Facilitation," the means whereby the infected person was facilitated in reaching a healthy individual. This involved a third party, a "facilitator," who wittingly or unwittingly participated, directly or indirectly, in the spreading of venereal disease. Included under this terminology are pimps, madames, bar-tenders, hotel clerks, dance-hall proprietors, taxi-drivers, property owners, etc. The co-operation of those unwittingly involved was most encouraging. Those wittingly involved constituted a different problem, not so easily solved. Due to the co-operation of the British Columbia Provincial Police, gaol sentences for third convictions, as provided for in the Criminal Code of Canada, section 229, subsection (4), were served on two well-known madames in the City of Nanaimo. There is every reason to believe that this move has definitely given us the advantage in our attack on the disease-dispensing activities of commercialized prostitution in the Province of British Columbia.

Beer-parlours, particularly in the City of Vancouver, have in the past constituted a serious public-health menace. Individual management, which is considered chiefly responsible for this, has failed to co-operate in dealing with the problem. Consequently, in April of this year, because of the increasing number of complaints about certain beer-parlours as a means of facilitation, an order was issued by the Liquor Control Board requiring that partitions be erected in all beer-parlours in order to segregate the sexes. Since this time the number of infections acquired from persons met in the beer-parlours has dropped. If complaints should increase due to carelessness in enforcing the restrictions, further steps will be taken toward a more complete segregation.

An attempt is being made to solve the problem of infections coming from public dance-halls. The suggestion that unescorted girls be denied admission has been made to the proprietors. This ruling was made for a short period in one well-known dance-hall in the City of Vancouver. A notable decrease in the number of infections coming from this place was evident, but due to the corresponding decrease in business the ruling was waived by the management and the number of infections reported from this establishment increased.

The referral to the Division by the Vancouver City Police Department of all women arrested on a morality charge has continued. By this means a great many infections are found among the professional group which might not otherwise have been discovered.

The routine examination of women confined to Oakalla Prison Farm continues to reveal a good many asymptomatic cases of venereal disease. Most of these receive sufficient treatment during their sentence to render them non-infectious.

Information obtained from members of the Armed Forces regarding sources of infection has been more accurate and detailed and the results of follow-up of these persons have therefore been more successful. This information has revealed an increasing number of promiscuous girls who are attracted to areas within reach of the Forces.

TEACHING AND RESEARCH.

The Director, now in charge of Venereal Disease Control for the Canadian Army, was invited personally by Surgeon-General Thomas Parran, of the United States Public Health Service, to attend and address the United States Government conference on "Venereal Disease Control Needs in War-time," held at Hot Springs, Arkansas, October 21st to 24th, 1942. His address was exceedingly well received. He presented a new or original angle on the question of dealing effectively with the question of commercialized prostitution. His topic was "The Facilitation Process and Venereal Disease Control." The subheading was "A Study of Source-finding and Suppression of Facilitation in the Greater Vancouver Area."

In the treatment-rooms of the Vancouver clinic two educational programmes have also been carried out, and their usefulness in this respect has been expanding progressively. The first has been the training of orderlies in the Royal Canadian Army Medical Corps under the immediate supervision of the Physician in Charge of Education. These men receive a two weeks' course which includes a general introduction and outline of the whole subject with its special applications to the Army; laboratory procedures, treatment procedures, and the subject of epidemiology, including source-finding, etc. It is anticipated that this will prove to be a valuable war effort and provide the working basis for the training of a personnel well qualified to carry on an intelligent programme of venereal disease control.

While the training of those who serve with the Armed Forces in war for the time being assumes a major importance, the peace is still to be won after the victory. With this object in view, student and graduate nurse education has also been progressively active. The number of undergraduate nurses receiving training in venereal disease control principles and methods has doubled, and the venereal disease training of senior year nurses taking the University course leading to a degree in the Science of Public Health Nursing and nursing supervision has reached a new high in efficiency. This course is planned with a definite object in view of enabling the nurse to take an active part in epidemiological procedures. This develops not only a highly trained personnel but also one that will broaden its own horizons in developing an enlightened social consciousness—an essential in venereal disease control.

GONOCOCCUS INVESTIGATION.

In the last three months of the year the Vancouver clinic has been fortunate in obtaining the services of a laboratory technician who spends approximately one-half of his time in the clinic performing routine laboratory tests and technician duties. This technician is a student of the University of British Columbia majoring in Bacteriology and under the direction of the Supervisor of Bacteriology and Director of the Provincial Board of Health Laboratories. He is carrying out a research on the gonococcus. This concerns itself with a study of the already known and recognized (but little understood) variants, the "giant" or "pseudo" forms of the gonococcus. An attempt is being made to ascertain whether or not these are a resistant, but nevertheless infectious, form of the gonococcus occasioned by the modern treatment methods of employing the sulphonamide derivatives in therapy. The possible clinical and therapeutic implications of this research cannot be stressed too greatly.

PROBLEMS OF 1943.

Without doubt new problems will be encountered in 1943, of which as yet there has been no warning. Certain others have cast their shadows before them in the months of 1942 and it is hoped and anticipated that some of these will find their solution in the year before us.

PERSONNEL.

One problem whose solution may possibly be in sight at least during 1943 is that of the removal from this Division of personnel considered indispensable. This was referred to by the Director in last year's report, since it was present in 1941 and was expected to become more acute in 1942. This prediction was fulfilled, but it proves to have been only a pious hope to which the Director gave expression when he looked for rectification by Ottawa of "unfortunate misuse of valuable human material." In April, and again in June, of 1942, the Director was asked to furnish a list of individuals from the Division who were indispensable. These persons were, it was considered, performing essential war service in their respective positions "within" the Division of Venereal Disease Control. In December a similar list was again asked for, and in assembling this list it was found that of five previously named "indispensable" only two now remain in the Division. If it is agreed, and disagreement on valid grounds cannot be visualized, that the work this Division is carrying out is not only one of National importance but also an important part of Canada's war effort, then this sort of thing must not go on.

SOURCE-FINDING.

From time to time the source-finding activities of the Epidemiological Section disclose that a woman has been the source of venereal infection to several members of His Majesty's Forces as well as civilians, and that the greatest difficulty has developed over locating these individuals and securing their attendance for treatment. Several of these individuals are old offenders, some of them previous patients of the clinic who have lapsed from treatment or acquired further infections. They are notoriously "birds of passage" and it is a difficult matter even to make contact with them. When contact has been made they often promise faithfully to report, but fail to do so, and when another search for them is made they have flown. Inevitably, they turn up again in some other part of Vancouver or of the Province, still continuing to disseminate venereal infection. The recognized procedure is to get as complete a report as possible, and as up-to-date as possible, on these individuals, furnishing every detail of evidence possible to make the case "hole-proof" so that this evidence can be presented to the Provincial Health Officer who may find that he is justified in committing the individual

into custody where treatment may be carried out, according to the provisions of the "Venereal Disease Act."

DISTRIBUTION OF SULPHATHIAZOL.

The distribution of sulphathiazol to doctors in rural centres was one which gave difficulty in 1941 but this has been effected more satisfactorily in 1942 by a scheme of local distribution through hospitals. The hospitals act as repositories from which physicians can obtain their requirements upon submission of notifications on Form N. 1.

BEER-PARLOURS.

Reports of infection from contacts made in beer-parlours have shown some increase lately; and it is felt that in spite of the partitions which are in general satisfactory, the waiters in many cases are not apparently exercising any care to prevent men entering the women's side and striking up acquaintance with unescorted women. This matter has been taken up with the Liquor Commissioner and the Vancouver Hotels Association, who have shown keen appreciation of the public-health aspect of the situation and promise to take necessary steps. The effect of this action should improve the situation in 1943.

DANCE-HALLS.

Some dance-halls are still acting as "facilitation" centres, and for a short time one of the worst offenders closed its doors to unescorted women. The resultant loss of patronage was so great that the management maintained that continuation of this would inevitably result in closing up altogether. It has been noted above, however, that in this instance there was a notable decrease in infections coming from this particular resort. The difficulty can be met in some instances by vigilant patrol of the premises by the proprietors. This is a distinctly co-operative gesture. In general it has been suggested that the one solution would be the patrolling of all dance resorts by women police officers.

The year 1942 has shown many changes and new developments in the Division. Some problems appear to have been cleared up while others must be passed on to the coming year when it is hoped they, too, may be disposed of. In 1943 it will take still greater effort, probably in the face of still greater obstacles, to accomplish as much as was done in 1942, but with the harmonious and loyal staff with which one is surrounded, united in a common purpose and bringing a high degree of intelligence and efficiency to the task, the Acting Director feels that there are grounds for an optimistic outlook for the coming year.

SUMMARY REPORT OF THE DIVISION OF TUBERCULOSIS CONTROL.

W. H. HATFIELD, M.D., DIRECTOR.

During the year 1942 the Division of Tuberculosis Control continued, despite increasing handicaps, to use every effort within its power to prevent and treat tuberculosis throughout the Province.

The previous year showed some reduction in the general tuberculosis death-rate. The year 1942 has shown some increase in the actual number of deaths, but as no complete figures are available as yet on the increase in the general population of the Province it is not possible to establish whether or not there has been an increase in the death-rate. It must be pointed out at this time, however, that conditions are becoming increasingly favourable throughout the Province for an increase in morbidity

from tuberculosis, making it more necessary to increase rather than to decrease the preventive and treatment aspects of the work of the Division of Tuberculosis Control.

Some of the changing conditions to be noted are the removal of a large number of young healthy men to the Armed Forces; the more rapid movement of population; the increase of population in British Columbia due to the development of war industries; the shift of population from other Provinces to British Columbia and from rural to urban areas; the employment of a greater number of handicapped people in war industries; longer working-hours; increasing anxiety that war produces; and the increasing housing problem. All these situations tend to make the control of tuberculosis increasingly difficult. Every effort is being made to anticipate these changes and to plan the work of the Division accordingly.

A large shift in population took place during the year with the removal of the Japanese from the coastal area to the Interior. The British Columbia Security Commission has taken full responsibility for the care and handling of all Japanese, including those with tuberculosis. This Commission altered a building at Hastings Park, Vancouver, creating a temporary hospital for tuberculosis cases. At the end of the year these patients still remained at Hastings Park. The Commission has planned a hospital at New Denver where these patients will be placed early in 1943. The Tuberculosis Division has acted purely as medical consultants as far as the care of these people is concerned.

STAFF.

Staff problems have loomed large during 1942, but as the year ends many changes and corrections have been made. It will not be possible to maintain the present work of the Division, let alone bring about an extension of effort which is more than apparently necessary, unless it is possible to retain all present staff of the Division in their present work. Trained personnel are essential. A full report has been prepared listing personnel of the Division as those that are absolutely indispensable and those that are dispensable if replaceable. With the great shortage of man-power and woman-power it has been found increasingly difficult to replace staff.

The medical staff of the Division is now at an absolute minimum and if the work of the Division is to be extended medical assistance will have to be obtained by some means. Plans in this regard have already been discussed with the District Medical Officer of the Armed Forces and every co-operation has been assured.

During the year there has been a great shortage of nurses. This has been particularly evident in the Tranquille Unit. Nursing aides have been introduced, but a nucleus of trained personnel must be maintained. It has been found necessary more than ever to concentrate the highly specialized work of the Division at the Vancouver Unit.

In the less technical fields the frequent changing and depletion of staff not only decreases efficiency, but increases costs. It is sincerely hoped that every endeavour will be made to stabilize staff throughout our institutions.

INSTITUTIONS.

The number of beds available for the treatment of pulmonary tuberculosis has remained constant since 1936. The time has now arrived when increased bed accommodation is essential. As has been previously advocated, compulsory isolation of the infectious case is necessary to bring about the desired control of tuberculosis in this Province.

Our population is increasing and war conditions are producing a situation in which tuberculosis is tending to increase throughout the population. In addition, there are increased methods of case-finding, such as the X-raying of all men inducted into the

Armed Forces, and plans are already in hand for industrial surveys throughout war industries. A careful calculation has been made as to what is essential now and it has been recommended that a new 500-bed convalescent type of institution be planned in or around Vancouver and that a 300-bed unit of this institution be constructed at the earliest possible moment. The problem of obtaining materials and equipping and staffing such a unit is quite apparent, but it is submitted that such problems are not insurmountable where an urgent need exists.

During the past year there were 831 admissions, of which 695 were new cases. There has been quite a substantial increase in the number of admissions through the Department of Pensions and National Health.

Once again we wish to recommend that the surgical floor of the Vancouver Unit be added as soon as possible. The Vancouver Unit now operates fully as a Government institution, purchasing certain essential services such as heat, light and power, and food from the Vancouver General Hospital. The taking-over of all members of the staff of this Unit as employees of the Tuberculosis Division was accomplished in the month of July.

During the year a new dairy was completed at Tranquille and all milk used at the institution is now pasteurized. The fire-hazard that exists at Tranquille was brought forcibly to our attention toward the end of the year when the fire-hall, canteen, and living-quarters above the fire-hall were completely destroyed. This will have to be replaced as an emergency measure and it is recommended that any further construction at Tranquille should be fire-proof.

STATIONARY AND TRAVELLING CLINICS.

The work of all clinics has been very heavy during the year. The 4- by 5-inch X-ray film which was introduced in 1941 has proved very successful. Improvements in technique have been established and now the 4- by 5-inch stereoscopic film has been brought into use. It was hoped that by this time we would have obtained the ambulatory unit which was donated to us by the B.C. Tuberculosis Society, the Vancouver Municipal Chapter of the I.O.D.E., and the Vancouver Kinsmen Club. It is proposed to use this unit for surveying workers in war industries and for extending work in rural areas. Priorities have been such, however, that at the end of the year this much-needed apparatus is still not available. It is anticipated, however, that we will receive it some time early in the forthcoming year. It is our plan for 1943 to extend the use of the miniature X-ray film as widely as possible throughout the Province in our endeavour to locate as many cases of tuberculosis as possible.

Due to reduction in personnel some changes in Travelling Clinic work have had to be carried out. In order to continue to render as much service as possible to rural areas an X-ray consultation system has been developed by which a physician may have an X-ray taken of any patient between our clinic visits by the local hospital and forward the film with a consultation form to any of our clinics for interpretation. In this way it is hoped it will be possible to carry out the examination of contacts and suspect cases without delay.

CASE-FINDING.

With the employment of more handicapped people in industry and the other situations created by war conditions mentioned in this report it becomes increasingly necessary to extend case-finding as far as our facilities will humanly permit. To this end our present Stationary Clinics are working with the object of examining as many people as possible within our clinics. It is our aim, however, now to carry X-ray facilities further out to the mass of the population through industry. Tuberculin testing will not be used nearly as much as heretofore and with mass radiography applied to industry

the work of the clinics will be greatly increased as all radiographs will be developed and interpreted in our present Stationary Clinics. There are many cases being turned down by the army because of chest disabilities and these cases are being referred to our clinics for follow-up work. It is believed that this extension of X-ray facilities is absolutely essential to the well-being of the people of British Columbia and that no effort should be spared to uncover every possible case of tuberculosis.

LEGISLATION.

It is hoped that by the end of this year there will be complete clarification through regulations under the "Public Health Act" which will make it mandatory for every infectious case of tuberculosis to be isolated and to remain in isolation as long as there is any evidence that the condition may be infectious.

CONTACT EXAMINATION AND FOLLOW-UP WORK.

Through the medium of clinics, Public Health Nurses, and social workers the follow-up work of the Division has been intensified. The opening up of Health Units in the Province is of material advantage in this regard and it is sincerely hoped that if possible there will be an extension of this Provincial policy and that there will be no curtailment of Public Health Nursing Services. The Public Health Nurse is an integral part of a tuberculosis programme, as is also the social worker.

PUBLIC HEALTH EDUCATION.

In any preventive programme public-health education must play a real part. Through the medium of literature, moving pictures, and lectures the Division continues to carry its message of tuberculosis prevention to as large a group as possible. In this regard the importance of the work of the home visitor, either Public Health Nurse or social worker, must be stressed. Her work in both home and school is one of the most potent means of carrying public-health information to the people.

REHABILITATION.

Rehabilitation appears to us still to be a word which covers an ideal for which little practical application has yet been found. In tuberculosis some form of rehabilitation must be developed in order to bring about ideal control of this disease. How it will be done remains for some authority other than our Division to determine. Whether it is providing extra assistance to the tuberculous patients discharged from institutions or providing sheltered industries or having certain jobs, either part time or of a light nature, that would be considered the prerogative of the tuberculous or the eventual development of a pension scheme remains still for consideration. In the meantime the Division endeavours to carry out as far as possible occupational therapy throughout its institutions and in Vancouver utilizes the services of the Vancouver Occupational Industries and in Victoria the Victoria Kiwanis Workshop.

GENERAL.

The Division has received great assistance from other Divisions of the Provincial Board of Health and other Departments of the Government and the co-operation shown is gratefully acknowledged. In addition, many individuals and outside organizations have given valuable assistance to our work.

As war progresses our problem becomes more serious and with the difficulties of obtaining staff and equipment for necessary expansion the situation becomes more difficult to approach. However, in spite of these difficulties we feel that definite progress has been made in 1942 and a programme has been carefully planned and outlined

for the year 1943. With the spirit of co-operation and interest that exists throughout the staff of the whole of the Division we feel that we can surmount any problem that we are called upon to face.

REPORT OF THE PUBLIC HEALTH ENGINEERING DIVISION.

R. BOWERING, B.Sc. (C.E.), M.A.Sc.,

PUBLIC HEALTH ENGINEER AND CHIEF SANITARY INSPECTOR.

The duties of the Public Health Engineering Division consist of sanitary supervision and control over such environmental factors as may have an effect on the public health. These factors include water-supplies, sewage-disposal, milk plant sanitation, cannery and industrial camp sanitation, investigation of sanitary complaints and public nuisances, and miscellaneous features of environmental sanitation. There is only one technically trained officer on the staff of the Division, but much valuable assistance in the whole sanitation programme was given by Sanitary Inspectors attached to local Health Units, by British Columbia Police Officers, and by officials of the Federal Division of Public Health Engineering. However, due to war conditions and the shortage of technical personnel, there has been great difficulty in meeting the demands on this Division.

With the advent of war in the Pacific, late in 1941, came a tremendous development of our north country, both on the Coast and in the Peace River District. This necessitated several trips to Prince Rupert and vicinity and to the Peace River District. In all this work there was excellent co-operation between this Division and the Division of Public Health Engineering of the Department of Pensions and National Health. In the Alcan Highway area there was excellent co-operation by the officers of the United States Public Health Service.

The appointment of Sanitary Inspectors to the staffs of the Prince Rupert and Peace River Health Units was a definite step forward.

The difficulty of securing material, hindered the development of sanitary works in many instances throughout the Province. The various activities of the work of the Division will be discussed under separate headings.

WATER-SUPPLIES.

The Provincial Board of Health has control over the water-supplies of the Province, in that plans for all new waterworks construction must be approved by the Provincial Board of Health.

It is estimated that 75 per cent. of the population of the Province receives water from public water-supply systems. There are about 150 public water-supply systems in the Province, many of which are owned by municipalities. Due to the nature of the topography, most supplies are obtained by gravity from mountain streams or lakes. It has been assumed in the past that where no human habitation existed on the watershed the water could not be contaminated with harmful bacteria. For this reason, some of the watersheds have been set aside as health districts and guards appointed to keep trespassers off. However, in many cases, no such guards are appointed. A number of sanitary surveys of watersheds were made and, in many of them, potential sources of danger were found. Analyses of series of bacteriological examinations of some waters from uninhabited watersheds showed that most surface waters are subject to intermittent contamination with bacteria, in numbers greater than is considered safe by health authorities in the United States and Canada. This applied to some water-supply systems where the watershed was guarded. In such cases chlorination of the water is advisable. Chlorination was advised in such instances. Analyses of water

from water-supply systems in which chlorinators had been installed in 1940 and 1941 showed gratifying results. During the year, Grand Forks, Penticton, and West Summerland started using chlorine, although in the latter two places permanent equipment has not yet been installed. During the year, under the "War Measures Act," the Federal Department of Pensions and National Health was given power to compel owners of public water-supply systems to chlorinate, if the water was being used by military personnel or defence-workers. As a result the cities of Vancouver, North Vancouver, Victoria, Nanaimo, and Prince Rupert have been ordered to install chlorinating equipment at Federal Government expense. None of these plants were in operation as the year closed.

During the coming year sanitary surveys of additional watersheds will be made. It is hoped that soon all the watersheds from which public water-supplies are taken will be covered. In addition, inspections of chlorinating equipment will be made since, if chlorinators are not properly installed and operated, the water will not be up to the desired standards.

Some of our municipalities have suggested waterworks schemes to the Provincial Post-war Rehabilitation Council. During the year, sanitary surveys of these proposed waterworks schemes will be made.

SEWAGE-DISPOSAL.

Most of our larger communities have public sewerage systems. Very few have sewage treatment plants, due to the fact that our larger populations are located near salt water where the sewage may be disposed of into the salt water where the dilution factor is high, and where there is no likelihood of contamination of drinking-water. However, there are places where disposal of sewage into tidal waters may contaminate oyster-growing areas or bathing-beaches. Several of the Interior towns have sewage-disposal plants and others are planning such installations for the post-war period.

There was practically no civilian sewage construction-work in the Province in 1942, except in connection with defence housing projects.

A detailed survey of one populated unorganized area was made during the year, and an estimate of the probable cost of constructing a sewerage system was made. No construction can be done now until the war is over, but it is the intention of the Division to make sanitary surveys of additional communities during the coming year so that estimates can be made for construction-work in the post-war period. Since the problem of building sewers in unorganized territories and villages is a financial one, some method of financing must be decided upon in the near future. The problem of lack of funds for necessary construction-work to improve sanitary conditions is one with which this Division is being confronted continually. Since most sewerage works are constructed by municipalities as local improvements, it might be advisable for the Provincial Government to construct sewerage-works in some of the more populated unorganized communities and charge them as local improvements on the property being served.

MILK SANITATION.

Since the inspection of dairies is the function of the Department of Agriculture, the principal function of the Division of Public Health Engineering in regard to milk has been the inspection of pasteurization plants. The fact that military camps use only pasteurized milk has caused the installation of pasteurization plants in some of our centres where only raw milk was available before. However, there are still communities in the Province where pasteurized milk is unavailable. Milk plant equipment is becoming more and more difficult to obtain, and this tends to retard the building of new plants and the improving of old ones.

During the year, many of our communities have suffered from the growing shortage of milk, due mainly to the shortage of farm labour. During the coming year it is probable that this shortage will become worse. It is also likely that the truck-tires of some of the local producer-distributors will wear out, making necessary the pooling of milk routes. Where routes are pooled the extra handling of milk increases the dangers to which the milk is exposed, and emphasizes the increased need of pasteurization.

An epidemic of scarlet fever was traced to a raw-milk supply late in the year. Under the present "Milk Act," the powers of the local Boards of Health are limited. Municipalities should have the right to require compulsory pasteurization of milk sold within the municipal boundaries. At the present time it is not possible for municipalities to enforce the production and distribution of a milk of such high sanitary quality that all milk sold within their boundaries can be considered safe for human consumption.

SHELL-FISH SANITATION.

The importance of sanitary control over oyster-growing areas is well recognized. No leases of foreshore lots for oyster-culture purposes were issued by the Provincial Government until the lots had been inspected and approved by the Provincial Board of Health. It is necessary to make repeated inspections of oyster areas to see that no new sources of contamination of the same have been introduced. Negotiations with officers of the Federal Department of Pensions and National Health were conducted further during the year, with a view toward writing of regulations whose enforcement will adequately protect the oyster-consuming public.

The sanitary control of oyster-growing areas was overshadowed this year by the occurrence of clam and mussel poisoning. In April, four native Indians on the west coast of Vancouver Island died within a few hours of each other, as a result of eating toxic mussels and clams. About the same time, several people died in Port Angeles, Washington, from a similar cause. Immediate measures were taken by the Provincial Board of Health to protect the oyster-consuming public by prohibiting the sale of all fresh clams and mussels taken in British Columbia coastal areas. Stocks of freshly canned clams were immediately frozen until suitable tests showed them to be safe.

The occurrence of clam and mussel poisoning is not new. In 1793 several of Captain George Vancouver's crew suffered from mussel poisoning. One of the crew members died. A few years later the Russian expedition exploring the Alaska Panhandle area under Captain Baranov also suffered the loss of a number of men due to mussel poisoning.

It is known that poisons in clams and mussels are usually associated with the appearance of a marine algæ which causes the water to become red. The Navy and Air Force were notified and asked to keep a look out for patches of red water. Both of these services co-operated, and a number of samples of red water were sent in for testing. Also, members of Fisheries Patrol collected clams and mussels at various points along the coast. The result of the tests showed that the red water was fairly well spread. The red water disappeared altogether in most cases by the end of autumn. As a result the ban on taking of clams was lifted in October to all areas except the west coast of Vancouver Island, which is still under the ban.

The services of Dr. Herman Sommer, California, a well-known authority on clam and mussel poisoning, were obtained for the purpose of studying the situation and reporting as to the best methods of control. His report is now on file. A joint survey as to the seasonal occurrence and nature of the toxin is being carried on by the Federal Department of Fisheries and the Department of Pensions and National Health. This survey was the direct result of the activity and control measures instituted by the Provincial Board of Health.

No deaths from clam or mussel poisoning occurred after quarantine measures were instituted. There was a marked drop in the toxicity in the fall months prior to the release of the ban. However, it is probable that there may be a rise in toxicity in the spring months again to a dangerous level, with the result that an annual quarantine of clams and mussels may become necessary each summer. Such a procedure has been necessary in the states of California, Oregon, and Washington.

CANNERY SANITATION.

The fish-canneries located between Butedale and the Alaska boundary were inspected during the year. Inspection of such canneries by the Provincial Board of Health does not include the inspection of the actual product, as this is done by the Federal Government. Our inspection is confined to the environmental sanitation of the canneries as it affects the workers and the people living near by. The water-supply usually comes from uninhabited watersheds. The problem of offal-disposal is fairly well met by the location of reduction plants at various places on the coast. This problem of offal-disposal was a serious one in the early days of the salmon-canning industry. The worst features existing at the canneries now are the housing and the methods of disposal of sewage and refuse.

Regarding housing, the few white employees are generally well housed. The native Indian families live in small huts, which are sometimes overcrowded, but probably not more so than the living-quarters on the reserves. The Chinese quarters are overcrowded in some canneries, but there is a trend towards improvement. There were, of course, no Japanese in the canneries this year.

A particularly bad feature in many of the canneries is the over-the-water type of privy, located on piles above low-water mark. Excreta lying exposed on the foreshore for periods of several hours each day is a constant source of danger to all those living on the cannery premises. In the post-war period, when plumbing material is available again, over-the-water type privies should be condemned as unsanitary when located on the foreshore above low-water mark.

The reduction plants mentioned above, although solving offal-disposal problems, have, in some instances, caused a serious odour nuisance. Considerable work has been done during the year toward the controlling of these nuisances. The result has been very gratifying.

INDUSTRIAL CAMP SANITATION.

A considerable number of inspections were made of industrial and construction camps during the past year, particularly in the northern part of the Province. The condition of these camps is generally good, although in some camps there was legitimate cause for complaint. The fact that labour was at a premium during the year has resulted in the maintenance of better camps, although the difficulty experienced by some operators in securing materials was a disadvantage. In the Alcan Highway district, inspection of the construction camp is made by officers of the United States Public Health Service in co-operation with the Provincial Board of Health.

Conditions at the hop camps in the Fraser Valley were much better in 1942 than they were in 1941, mainly due to better weather conditions. The dissatisfaction that existed in 1941 was mainly due to the rainy weather making the camp-sites muddy and forcing the people to stay indoors in rather cramped quarters in the daytime.

The appointment of Sanitary Inspectors to the staffs of the Prince Rupert and Peace River Health Units greatly facilitated the work of camp inspection in these areas. It is hoped that, as time goes on, the appointment of Sanitary Inspectors in other parts of the Province will greatly improve the facilities of the Provincial Board of Health for making inspections of industrial camps.

SANITARY COMPLAINTS.

A number of sanitary complaints are received each year. Most of these are of minor importance, although a good deal of time must be spent in their investigation. Wherever possible methods of abating the nuisances are suggested. Many complaints are investigated by local Health Officers and by Provincial Police constables.

Many of the complaints are concerned with the disposal of septic tank effluent and other filthy liquids into ditches and watercourses. In many built-up areas these nuisances can only be abated by the construction of public sewerage systems. Since many of these communities are unorganized, and since in some instances the citizens are not interested in having an improvement district formed for the purpose of constructing sewers, it would seem that some method of financing such schemes might properly be suggested as one for consideration by the Provincial Government. Another type of nuisance that is difficult to solve is in regard to garbage-disposal. For unorganized communities there is no fund available for the care of garbage-dumps, with the result that some of these rapidly become nuisances. It is suggested that some method of financing for the care of garbage dumps in unorganized territories also be considered.

CO-OPERATION WITH ARMED FORCES.

The policy of the Provincial Board of Health is to render all assistance possible to the Armed Forces. This Division has, on a number of occasions, assisted the hygiene officers and the engineers in solving sanitary problems. This work included inspection of pasteurization plants, water-supply sources, and consultations regarding sewage-disposal methods.

GENERAL OBSERVATIONS.

During the past year the work of the Division was greatly influenced by the war on the Pacific and the development of the north country. The influx of workers into the northern part of the Province caused a number of sanitation problems that called for immediate attention, and as a result some of the work that had been planned for the year had to be dropped. However, a number of sanitary surveys of water-supply systems and sewerage systems were made.

During the coming year a good deal of attention will be paid to plans for post-war reconstruction. A number of proposals for sanitary public works have been made to the Post-war Rehabilitation Council, and these will be investigated in the coming year. Relations with other Divisions of the Provincial Board of Health have been most cordial. The Division of Laboratories has been especially co-operative in their examinations of samples of milk, sewage, and water. The Provincial Police continued to render valuable assistance in the inspection of sanitary complaints in outlying areas. The co-operation extended by the Federal Division of Public Health Engineering has been much appreciated. The Division wishes to acknowledge with thanks the unstinted and valuable assistance rendered by members of the staff of the Provincial Board of Health.

REPORT OF THE DIRECTOR OF PUBLIC HEALTH NURSING.

MISS H. KILPATRICK, B.A., B.A.Sc., R.N.

The close of each year provides an opportunity to assess wherein there has been success and wherein the desirable has not been attained. It is the time, also, to give consideration to ways and means of bringing about the desired improvements.

During 1942 many changes took place. Changes in personnel were particularly numerous. Ten new Public Health Nurses were employed throughout the Province

and arrangements were made for the transfer of eleven from one district to another. Seven Public Health Nurses were married during the year and of these four resigned. Another five Public Health Nurses left the service for other reasons. Great difficulty was experienced in obtaining Public Health Nurses as and when they were needed. For this reason three districts were temporarily closed, two for periods of three months and one for four months. In two cases qualified Public Health Nurses were obtained, while in the third case the district is now being served temporarily by an untrained worker. In two other districts untrained nurses were employed for periods of four and five months respectively until such time as qualified Public Health Nurses could be obtained. It was found necessary also to reduce the Public Health Nursing staff of the Peace River Health Unit from four to three nurses and the Public Health Nursing staff serving Matsqui-Abbotsford-Sumas area from three to two. This was done so that new districts could be opened and does not mean that any part of the areas served by the staffs stationed in those areas are without service. In these areas, as in three others in the Province, the districts served by individual Public Health Nurses were extended. Such extension of territory is encouraged in order that the essential services may be made available to as many people as possible. Increases in population in certain of our centres wherein services had already been established has resulted in the need for similar alterations in programmes.

In an effort to utilize the services of the limited number of Public Health Nurses to the best advantage, it was considered advisable to establish the two new services in districts where there had recently been a considerable increase in population. These new districts are North Saanich and Prince George. To meet the greater need in Prince Rupert the Public Health Nursing staff was increased to two.

Thus at the close of 1942 there were forty-seven Public Health Nurses stationed in thirty-five centres, with an additional centre served by a temporary unqualified substitute. One new district is organized and ready to appoint a Public Health Nurse as soon as one may be available.

One very encouraging feature is that the class now taking the Public Health Nursing course at the University of British Columbia is the largest ever to be enrolled. It is hoped that when this class graduates in May of 1943 there will be a sufficient supply of qualified Public Health Nurses to fill vacancies that will exist and to allow for further extension. With the reduced number of physicians, particularly in the more sparsely settled areas of the Province, the need for Public Health Nurses is even greater. To meet this emergency situation the Public Health Nurses are being required to undertake ever greater responsibilities.

A further problem has developed in the need for experienced workers, since such are essential not only for the work in these more isolated centres but also to undertake the opening of a new district. In a group of forty-nine individuals some, for a variety of reasons, cannot be expected to transfer from one area to another. It will readily be seen that since there were transfers of twelve in 1941 and eleven in 1942, with a total in these two years of twenty-one new appointees, some of whom had had no previous experience, the difficulty of giving guidance in the selection of appointees is very great. The needs of the isolated or new districts as well as the needs of the district in which the Public Health Nurses are already employed must be considered. The policy is that Public Health Nurses should remain in one and the same district for at least two years. Every effort is being made to maintain this policy, but it is becoming more apparent that the establishment of additional districts may necessitate arrangements being made for transfers to new areas of Public Health Nurses who have had less than the desired experience of two years. Up to the present, local communities have been most co-operative in facilitating the release of experienced Public Health Nurses to allow them to accept appointments to new districts. Such transfers

of experienced workers are beneficial to the community served and the individual Public Health Nurse. It is with the desire that the advantages of the Public Health Nursing Service should be made equally available to all in the Province that this co-operation is solicited and every effort is made to ensure adequate replacement of employees of local communities to the satisfaction of all concerned.

The Public Health Nurses themselves have in every way endeavoured to adjust to meet new needs. The elimination of unproductive activities has been carried out in most districts. Extensions of territory which will provide essential services to a greater number of people have been willingly undertaken. In common with many other workers the Public Health Nurses are confronted with the difficulties which arise from the unusual migration of individuals and families from one place to another. This movement of people gives rise to many difficulties. Among these is the question of maintaining individual and family records. In some cases it is practically impossible to maintain records of families which come to a district, stay a few weeks, and depart for another and perhaps an unknown destination.

Housing conditions in some centres have their attending problems. In many centres young mothers may be living in strange surroundings far away from relatives and with few, if any, friends. The need for adequate supervision and guidance of these mothers in the care of themselves and their young children is very apparent. Physicians practising in such areas are already overworked. One possible solution is the employment by the Provincial Board of Health of a certain number of Public Health Nurses who could be used to supplement local services for the period during which the need exists. One reason for such action is that the additional and often transient population in a given area cannot be considered to be the full and complete responsibility of local authorities.

The Public Health Nurses have continued to work with local A.R.P. groups. Early in 1942 each Public Health Nurse who was situated on Vancouver Island and at certain coastal points prepared emergency supplies to be used in the event of the possible movement of large groups of the population. These supplies include those for first aid and for maternity work and have been kept intact during the year.

As has been stated, the Public Health Nurses have met the demands made upon them and have co-operated willingly. It is particularly encouraging when in contrast to some other areas the Public Health Nurses in this Province have continued to contribute to the well-being of the people on the home front. These workers have been trained for this work and with the exception of one have all seen fit to carry on with the duties for which they are best fitted. As mentioned in the report of last year, it is important that working conditions should be given adequate consideration. Although some progress has been made, complete adjustments in salaries have not been accomplished as yet and there is no uniformity in the provision of cost of living bonuses. Work is still going on with regard to formulating a pension plan, but as yet establishment of this desirable factor in working conditions has not been attained. These matters are of vital importance to the workers and efforts to bring about satisfactory conditions are being continued.

Supervisory visits were made to the majority of Public Health Nurses during the year. Because of the geographical distribution of Public Health Nurses it is not always possible to provide as much supervision as is desirable. With the ever-increasing number of workers the need for additional supervisory staff is becoming more urgent. Adequate supervision is essential particularly when, because of existing conditions, it has been found necessary in local areas to employ nurses who are untrained in public health. It is hoped that within the near future more supervision may be made available.

Again in 1942 the "Institute for Public Health Workers" was conducted. Sessions were held in Victoria on April 7th, 8th, and 9th and were attended by all those Public Health Nurses who could leave their districts. The various subjects included were Mental Hygiene in Wartime; Nutrition; Maternal, Infant, and Pre-school Health; together with contributions made by specialist members of the staffs of several of the Divisions of the Provincial Board of Health. Those who attended were particularly enthusiastic about the material presented to them this year. The Institute, which is held annually, is one of the most valuable channels through which improvement in the service may be assured.

The News Letter which is now called "P.H.N. News and Views" has been issued regularly each month. It continues to carry information to the Public Health Nurses as well as material compiled by individual Public Health Nurses.

British Columbia is again very fortunate in that the Rockefeller Foundation has seen fit to grant a fellowship to another Public Health Nurse. Miss Dorothy E. Tate, who completed the degree course in Public Health Nursing at the University of British Columbia, and was later employed in Public Health Nursing work in Saanich, Vancouver, and on the staff of the Division of Tuberculosis Control, is now at Columbia University taking special work. It is indeed encouraging that another British Columbia worker is the recipient of such an opportunity, the fruits of which will benefit public-health work in this Province in the future.

In reviewing the activities of the year 1942 it may be seen that some problems have been met, while others are as yet unsolved. Efforts are being continued to meet needs which have arisen in the past. With the changing conditions there is no doubt that new and perhaps greater difficulties will be encountered. Health is assuming ever greater importance and increasing interest in this important subject is being shown by local communities. With the encouragement of this interest and the continued co-operation of people in local areas it is hoped that old and new problems may be adequately met.

SUMMARY REPORT OF THE GREATER VANCOUVER METROPOLITAN HEALTH COMMITTEE.

On November 1st, 1942, the Metropolitan Health Committee began its seventh year of operation.

In the opinion of the component bodies the scheme has worked out to the advantage of all parties and the committee has worked in excellent harmony.

The net result of this organization has been a material improvement in the type of service offered for the money expended; a broadening of the whole health programme; better coverage for the amount assessed to public-health administration; increased services made available through grants of money received from the Provincial Board of Health and Rockefeller Foundation.

During 1942 an appreciable increase occurred in the birth-rate and the death-rate remained more or less satisfactory, this resulting in a substantial rise in the natural increase rate.

In addition to the natural increase, the Greater Vancouver Area has experienced a considerable increase in the population as a result of the many war activities carried on.

The infant mortality rate remains appreciably unchanged, being in the neighbourhood of 30 per 1,000 living births, but the still-birth rate was somewhat higher.

The incidence of communicable diseases was considerably higher for scarlet fever, diphtheria (in which there were eight cases as compared to one the previous year), whooping-cough, mumps, and chicken-pox. Both syphilis and gonorrhœa showed a slight increase. Tuberculosis cases reported showed a marked increase, which is, in part, accountable by the increase in the number of physical and X-ray examinations.

The year 1942 was remarkable in that we experienced the greatest number of poliomyelitis cases ever to have occurred in the Greater Vancouver Area.

In contrast to the increased number of communicable diseases a greater number of children were immunized against diphtheria, smallpox, and whooping-cough than in previous years.

In keeping with the policy of attempting to improve the standard of work done, a better method of reporting cancer has been worked out in conjunction with the Provincial Board of Health and the Cancer Institute for the control of cancer.

Increased advice was given in prenatal, postnatal, infant, and pre-school welfare through educational letters.

Dental services were expanded in both Vancouver and Burnaby, but, owing to shortage of staff as a result of the war, services were suspended, temporarily, in the Municipalities of North Vancouver and Richmond.

In the field of milk and food control, no outbreaks of food poisoning or food infection could be traceable to food handled by the general public, but a few occurred in private groups.

Housing remains an extremely serious problem.

The staff works in close co-operation with other social agencies in following the trend of placing children in homes while mothers carry on in industry. The problem has not reached serious proportions here as yet.

Some twelve members of the staff have joined His Majesty's Forces.

Dr. G. Saunders was given leave of absence to direct a programme of Industrial Health Service for the Wartime Shipping Board.

Dr. White, who had retired on superannuation, was immediately rehired in a slightly different capacity.

A considerable portion of the staff's time was taken up with A.R.P. activities but without detriment to our public-health programme.

The evacuation of Japanese from the Greater Vancouver Area created a further problem, which required the assistance of many members of the staff.

It is our hope for 1943 to introduce a Nutrition Service and considerably extend our immunization and T.B. control programmes, in addition to carrying on other essential activities.

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASE IN THE PROVINCE OF BRITISH COLUMBIA FOR THE YEAR 1942.

	Actinomycosis.	Botulism.	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	Gonorrhoea.	Influenza.	Leprosy.	Measles.	Meningitis (Simple).	Mumps.	Paratyphoid Fever.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomylitis.	Rubella.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.
Abbotsford					75	3						3		7		109		13		2		29	37						2	5	285
Agassiz					2									1		6								4							13
Alberni														22		2						40	5								2
Alert Bay				1	9		1									177															262
Armstrong					5							2				11		10	1			9	6								54
Ashcroft					1											3		1	6			10	2	3							26
Atlin		1			1	3						233		2		1		1						4		1					246
Beattie Anchorage																1															1
Bella Bella					1			38		1		32					6	7				2	2								89
Bella Coola				1	9							11					1	1											1		25
Blubber Bay												21																			21
Blue River																1															1
Bralorne																		3				2									9
Britannia Beach					5									1		25		2						5							38
Burns Lake					1									33		24		10	1			1									84
Campbell River				1	2							3		2		54															65
Castlegar				1	36									1		49						57	3								154
Ceepeecee																								2							5
Chase					5					1		27												1							36.
Chemainus					2									3		342								8							356
Chilliwack					13									18		20		1				1	21			8		2	2		84
Coal Creek					23											11						2									36
Coal Harbour														1		1															2
Cobble Hill				1	16									3		12						31							10		73
Copper Mountain														4																	4
Coquitlam				1	17									1		52							18								92
Courtenay				2	33	4						72		6		128		2	5	1		5	7	2				1			268
Cranbrook					3									6		23		1				4	12	1							52
Creston					27									3		190			6			2	7								241
Cumberland					5											43		4	1			1	13								67
Duncan				3	63									1		171		3					1	2							252
Carried forward	1			11	354	10	1	38		2		404		115		1,455	56	35	4	198		136	30			5		2	7	79	2,943

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASE IN THE PROVINCE OF BRITISH COLUMBIA FOR THE YEAR 1942—Continued.

	Actinomycosis.	Botulism.	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	Gonorrhœa.	Influenza.	Leprosy.	Measles.	Meningitis (Simple).	Mumps.	Paratyphoid Fever.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomyelitis.	Rubella.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.	
<i>Brought forward</i>	1	1		40	1,963	47	52	39	3	42		624		430	2	4,537	2,145	159	21	12,395	742	268				27		21	18	732	10,323	
Sechelt.....				1	3							18		2		4					1	1									31	
Sidney.....					3							16		4		13					2	26							1		27	92
Smithers.....									1	1						36		2	1		1	6	2							17	67	
Sooke.....				2	45					1				2		143			1		4	3	3							43	246	
Squamish.....																6														14	20	
Steveston.....																1		1													2	
Stewart.....																2		2												1	3	
Summerland.....					10					1		34				2		2	3											1	126	
Telegraph Creek.....																		2												1		
Terrace.....														7		11		1					2							1	22	
Tofino.....																																
Trail.....					164									13		164	1				2	46								80	470	
Tulsequah.....										1						29		2													34	
Ucluelet.....																																
Vancouver Metropolitan Area.....				40	1,850		8		31				1	1,211		5,690		2	2	241	35	251	526				5	7	662	9,558		
Vanderhoof.....														6		2		3		1	4	1	1						16	34		
Vernon.....				2	17	5								14		81			4	2	13	44					1		23	206		
Victoria.....				8	520				2					16		1,506		1			42	94						3	109	2,301		
Wells.....					40									2							3	1	2								48	
Westbank.....					1											2															3	
West Summerland.....																																
West Vancouver.....				2	12					1				8		27		2			22	8							4	89		
White Rock.....																2															2	
Williams Lake.....					28									3		2		3	1			22							10	63		
Woodfibre.....					1									2		7		2		1									2	15		
Zeballos.....				1														2	8	2									11	25		
Whole Province—																																
Cancer.....			920																												920	
Gonorrhœa.....											1,820																					1,820
Syphilis.....																									907							907
Tuberculosis.....																															1,345	1,345
Totals.....	1	1	920	96	4,151	52	60	39	4*	80	1,820	692	1	1,720	3	3,12,267	3	165	179	267	47	8,121	1,522	281	907	27	1,345	28	29	1,753	28,772	

* This includes one case of equine encephalomyelitis.

REPORT *of the* PROVINCIAL BOARD OF HEALTH

YEAR ENDED DECEMBER 31st, 1941.

INTRODUCTION.

This, the forty-fifth annual report of the Provincial Board of Health for the year ended December 31st, 1941, contains an outline of the various and diversified activities, services, and progress of the Provincial Board of Health of British Columbia.

Brief, narrative accounts have been prepared by the Directors of the Divisions of Laboratories, Vital Statistics, Venereal Disease Control, Tuberculosis Control, and the Bureau of Local Health Services, including Public Health Nursing, Health Units, Preventive Dentistry, part-time local Medical Health Officers and School Medical Inspectors, Communicable Disease Control, and Public Health Engineering.

More detailed reports, including analysis of extensive statistical data, are available in special reports for the Divisions of Venereal Disease Control, Tuberculosis Control, and Vital Statistics. In these extensive divisional annual reports can be found a wealth of detailed data concerning their specific programmes.

It is gratifying to note that the general death-rate remained the same as for 1940; that is, 10.5 per 1,000 population. However, certain communicable diseases have occurred in larger numbers than for some years past.

The number of people reported as suffering from diphtheria is the highest for four years. This, in spite of the fact that diphtheria toxoid is made available free to the people of the Province of British Columbia through their Health Departments and physicians, and the fact that most health authorities in the Province have been advocating protection of children against diphtheria for many years past.

The fifty-nine cases of typhoid fever reported for the year 1941 point to the necessity for greater interest on the part of local communities and the public in the improvement of general sanitation and the protection of water-supplies and the provision of safe milk. Adequate sewage-disposal is not satisfactorily practised throughout the Province. Public health authorities have considered the typhoid fever rate as an indicator of the effectiveness of local health service for many years.

Extensive surveys have been carried out by the Provincial Public Health Engineer into many of the water-supplies in the Province. These surveys bring to light numerous potential opportunities for intermittent contamination of the water supplies by pathogenic bacteria which may cause disease in the consumer. It is gratifying to note that Kelowna, Kamloops, and Ashcroft have seen fit to safeguard their water-supply by the installation of suitable chlorinating apparatus. Other municipalities are studying the application of this safeguard in their water-supplies and it is hoped that these municipalities will follow suit in 1942.

Though the Province of British Columbia experienced an extensive epidemic of poliomyelitis (infantile paralysis) during 1941 the Province was spared from encephalomyelitis as experienced in the Prairie Provinces.

During 1941 most of the programmes developed by the Provincial Board of Health or coming under the supervision of the technical staff of the Provincial Board of Health were carefully studied, reviewed, and reorganized to prevent as much overlapping as possible, and to permit the technical staff to extend their activities to serve as many

persons as feasible because of the increased importance of public health as part of the war effort. In addition to stream-lining the programme, some activities have been dropped to permit of the utilization of more time of the reduced technical staff on those problems of a more urgent nature and directly connected with the efficiency of the people.

The work of the Public Health Nurses and their effectiveness was greatly extended by including in their activities the supervision of the general health of the community, particularly that of the pre-school, the infant, and the prenatal periods of life. This was made possible by a close co-operation and willingness on the part of the School Boards of the Province in accepting the suggestions and recommendations of the Provincial Health Officer to extend the activities of their nurses. The Provincial Health Officer was extended the honour of an invitation from the Executive of the British Columbia School Trustees' Association to speak at their annual meeting in Nanaimo. This gave him an opportunity to explain ways and means in which the services of the Public Health Nurse could become more effective in aiding in the improvement of the health of the people. The results have been very gratifying, following this meeting.

There has again been a reduction in the technical staff of the Provincial Board of Health and the vacancies are becoming more difficult to fill. Never were the services of technically trained public-health personnel more required than at the present time, and yet, as the members of the technical staff are all young and recently trained, they are in constant demand for the Armed Forces. A let-down in the health-protection services for the people may not only interfere with the health of some of the people but may seriously impede war industry as well as interfere with the health of the Armed Forces.

The Provincial Board of Health continues to supply public-health laboratory services for the Armed Forces as well as specialized public-health consultation services when requested by the hygiene officers or engineers of the three Forces. The Public Health Engineer is called on to deal with many problems of sanitation and sewage-disposal related to war establishments.

ROCKY MOUNTAIN SPOTTED FEVER, TULARÆMIA, AND PLAGUE SURVEYS.

The co-operative survey of Rocky Mountain spotted fever, tularæmia, and sylvatic plague in the Provinces of British Columbia, Alberta, and Saskatchewan was continued during the spring and summer of 1941. This survey is a co-operative effort in British Columbia of the Provincial Board of Health, the International Health Division of the Rockefeller Foundation, and the Dominion Department of Pensions and National Health.

Again, a second crew was placed in the field early in the spring to permit the survey to gather as much data in as extensive an area as possible at the time of year when the annual life-cycle of the ticks was at its most ideal stage for collecting.

The specimens collected were examined at the virological research laboratory of the Department of Pensions and National Health in co-operation with the Live-stock Insect Laboratory of the Department of Agriculture at Kamloops, B.C.

No evidence of sylvatic plague was found in the specimens examined. The details of the other findings are on record in the Department of Pensions and National Health and also the Provincial Board of Health.

Following the summer survey the usual rat surveys were conducted in Vancouver, New Westminster, Victoria, and vicinity. These surveys again showed that there is an extensive rat population in the lower mainland and indicate the necessity of continual and more effective rat-control methods by all municipalities in the area.

APPOINTMENT OF MR. J. D. B. SCOTT, DIRECTOR, DIVISION OF VITAL STATISTICS.

To fill the vacancy created by the resignation on August 31st, 1941, of Mr. J. T. Marshall to take over the position of Chief, Division of Vital Statistics, Dominion Bureau of Statistics, Ottawa, Mr. J. D. B. Scott was appointed Director, Division of Vital Statistics, Provincial Board of Health, for the Province of British Columbia.

Mr. Scott is a native son of British Columbia and received his preliminary education in the Interior of the Province. He is a graduate of the Provincial Normal School and of the University of British Columbia, from which he holds the Degrees of Bachelor of Arts and Bachelor of Commerce.

Not only has Mr. Scott excellent academic qualifications to fill the position of Director but, in addition, has had four years of practical experience with the Division prior to his appointment, together with experience gained when employed on the research staff of the Economic Council of the Province.

He first joined the staff of the Division on February 1st, 1937, as Statistician. From then until the time of his appointment as Director, Mr. Scott has more than proved himself capable of assuming the position which he now holds. Under his able guidance and leadership it will be possible for the Division of Vital Statistics to maintain the progressive endeavour so diligently created and maintained by his predecessors.

RESIGNATION OF MR. J. T. MARSHALL.

The Provincial Board of Health lost one of its most valuable members to the Federal Government when, on September 1st, Mr. J. T. Marshall, Director of the Division of Vital Statistics and Supervisor of Medical Records, left the staff of the Provincial Board of Health to take over the duties of Chief of the Vital Statistics Branch of the Dominion Bureau of Statistics. Mr. Marshall's resignation was a great loss to the Provincial Board of Health because of his long and practical experience in the field of vital statistics and his close association with the development of public health in the Province.

Mr. Marshall has spent almost a quarter of a century working in the field of vital statistics. During this long period of service, Mr. Marshall held increasingly responsible positions until, on April 1st, 1939, he was appointed Director of the Division of Vital Statistics. During his years in the public service he initiated many of the procedures and policies now in force in the Division of Vital Statistics.

Mr. Marshall was far-seeing in his view-point concerning the function of the Division of Vital Statistics and its place in the public-health programme. He saw that completeness of registration of births, deaths, and marriages was only the beginning of the responsibility of the Vital Statistics Bureau. He believed that fundamentally a Division of Vital Statistics should be the "workshop" of a Provincial Board of Health and that it should be designed to compile and analyse statistical information for proper evaluation of the public-health programme and periodically thereafter to analyse its progress and efficiency. With this as his view-point, he was responsible for the introduction of modern mechanical tabulation methods into the Division so that detailed statistical analyses could be made whenever required.

Forms and records were a particular specialty of Mr. Marshall. He drafted many of the forms in use in the Division of Vital Statistics. Because of his experience in this field he became adviser and co-ordinator of the records of the various divisions of the Provincial Board of Health under the title of Supervisor of Medical Records. In 1936 Mr. Marshall was asked to develop a record system for the Division of Tuberculosis Control. The following year he was asked to reorganize the record system for the new

Division of Venereal Disease Control. He created numerous codes for statistical analysis, together with forms and punch-cards for the various health and welfare branches operating under the jurisdiction of the Department of the Provincial Secretary, and he reorganized completely the filing and indexing systems of the various divisions of the Provincial Board of Health.

Based on his long experience in vital statistics and his appreciation of the needs of the public, Mr. Marshall has influenced important public-health legislation in the Province. He drafted the "Marriage Act" of 1930, the "Vital Statistics Act" of 1935, and assisted in the drafting of the "Adoption Act" of 1935. In 1938 a Parliamentary technical committee on the "Marriage Act" of British Columbia was appointed. In the capacity of secretary Mr. Marshall wrote the report of the committee and drafted the legislation to implement its recommendations.

It was with sincere regret that his associates saw Mr. Marshall go to Ottawa, but they felt that he was entering a larger sphere of work commensurate with his ability and wide experience. What has been the Provincial Board of Health's loss will be the Dominion Bureau of Statistics' gain.

THE HEALTH OF THE PEOPLE OF BRITISH COLUMBIA.

AS REFLECTED IN THE MORTALITY FIGURES FOR 1941.

BY J. D. B. SCOTT, B.COM., B.A., DIRECTOR, DIVISION OF VITAL STATISTICS.

A brief summary of the health of the people of British Columbia, based on statistical data available, is presented as it is felt that it should be of considerable interest.

Mortality figures do not necessarily reflect the health of the people. However, careful study of leading causes of death for British Columbia for 1941 does render useful information. The death-rate remained 10.5 per 1,000 population as in 1940. The figures show continued increase in the number of deaths at ages 60 years and over. In fact, well over half of the total deaths in the Province were in this age-group. About one-fifth of the deaths were in age-groups 40 to 59; approximately one-twelfth between 20 and 30; and over one-eighth under 20 years of age.

This gradual reduction in deaths in the younger age-group is one of the goals set by public health. The increased mortality in the higher age brackets raises the question as to the development of preventive programmes to increase the efficiency of this age-group by a reduction in the chronic and debilitating diseases, and a further reduction of those causes which are still taking an unnecessary toll of life.

Five hundred and eighty-eight infants died before reaching 1 year of age. This figure represents more than one-half of all deaths under 20 years of age. The infant mortality rate became greater than that of the past two years. The 1941 rate was 39.3 deaths per 1,000 live births, in comparison with 38 in 1940 and 39 in 1939. Further emphasis on the public-health programme in this regard is expected to produce a downward trend in the future. There were thirty-four maternal deaths in 1941, bringing the rate down to 2.3 per thousand live births from 1940's figure of 3.1. This is a rather spectacular drop for one year and, therefore, may not be maintained.

A study of the leading causes of death for all ages shows diseases of the heart in first place, accounting for 1,889 deaths in all. There were 1,161 deaths due to cancer, making this disease the second leading cause of death. Diseases of the arteries ranked third and violent or accidental deaths fourth. Tuberculosis ranked fifth with 517 deaths; the tuberculosis mortality rate fell from 72.7 in 1940 to 63.9 per 100,000 population. If Indian deaths due to tuberculosis are excluded the rate becomes 45 for the remainder. The sixth leading cause of death was nephritis and pneumonia the seventh. Diseases of early infancy ranked eighth, followed by cerebral hæmorrhage. The num-

ber of deaths due to influenza fell somewhat in 1941 from the excessive figure of 179 in 1940. The 1941 figure for influenza deaths was 147, making this disease the tenth leading cause of death for British Columbia.

In order to gain a full appreciation of the mortality picture of the Province it is necessary to consider Indian deaths as they affect certain specified diseases. In general, the Indian mortality exerts little influence on the ranking of the leading causes of death in the age-groups 30 years and over. It is under 30 years of age that the most significant differences occur. In fact, over 60 per cent. of all Indian deaths were in the age-groups under 30 years of age; almost one-quarter of the Indian deaths were under 1 year of age and over one-third were under 5 years of age. Approximately one-quarter of the deaths of infant Indians were due to pneumonia and bronchitis. Tuberculosis accounted for almost one-third of all Indian deaths. Eighty per cent. of these were Indians under 30 years of age.

It will be seen that Indian mortality exerts a very unfavourable influence on the vital statistics of the Province for certain diseases, especially tuberculosis, pneumonia, and influenza. As Indians are wards of the Federal Government they do not constitute a direct responsibility of the Provincial Board of Health. Indirectly, however, their existence as a potential threat to the health of the people cannot be ignored in the public-health programme.

Analysis of mortality figures must always be studied with an eye to both the cause thereof and the means of prevention which must be employed to lessen the number of preventable deaths. The Provincial Board of Health uses such an analysis to direct its programme. Often it is necessary to exclude Indian deaths if a true picture of the responsibilities of the Board of Health is to be evaluated. Therefore, the following statistics by age-groups are exclusive of Indians.

A study of the deaths under 1 year of age reveals that the 1941 figures compare very favourably with the previous year. Premature deaths ranked first in this age-group, but the rate dropped to 10.5 deaths per 1,000 live births from 10.9 in 1940. Attention to prenatal and postnatal care should reduce this rate further in the future. The second cause of death under 1 year of age was congenital malformations—the causes of which are not as yet controllable to any great extent by preventive measure. Pneumonia and bronchitis ranked third, accounting for about one-tenth of the deaths of infants.

There were ninety-four deaths among pre-school children. Here the leading cause of death was violent or accidental deaths accounting for approximately one-third of all the deaths between the ages of 1 and 4 years. Eleven of these deaths were due to drowning and seven to motor-vehicle accidents. Certainly some, at least, of these accidents could have been prevented. Pneumonia and bronchitis ranked second with nine deaths. This is smaller than the figure for 1941. With new advancements in pneumonia therapy this figure should be reduced still further in the near future.

Violent or accidental causes were responsible for one-fifth of all deaths under 40 years of age, making this the leading cause in that age-group. Many of these accidents would never have happened if proper measures had been taken to prevent them. This is a problem the Provincial Board of Health attempts to meet by educational means.

The second leading cause of death among young people between the ages of 10 and 39 is tuberculosis. This disease is preventable. The Division of Tuberculosis Control of the Provincial Board of Health has an admirable programme and with its continued application it is to be hoped that in some years tuberculosis may be struck off the list of leading causes of death. It is encouraging to find that the tuberculosis death-rate among the younger and economically valuable age-groups is decreasing continually.

The chief cause of death between the ages of 40 and 59 years was heart-disease. This disease is preventable to a certain extent, or at least deaths due to it may be post-

poned to a later less productive period of life. The second cause of death in this age-group is cancer. Earlier diagnosis and treatment of this disease would undoubtedly have reduced the number of cases. Violent or accidental deaths ranked third and tuberculosis fourth in these middle ages.

Diseases of the heart rank first among the causes of death after 60 years of age. The second cause is diseases of the arteries, and cancer the third.

Examination of the deaths from acute communicable diseases (including Indians) reveals a favourable comparison between 1941 and the previous year. Especially is this so in the case of septic sore throat, whooping-cough, and typhoid fever. Encephalitis has dropped from five cases in 1940 to three in 1941. However, there were seventeen cases of cerebrospinal meningitis reported, a big but not unexpected jump from the 1940 figure of four cases. The very existence of these deaths from communicable diseases proves that methods designed to control and eliminate them must be continued and extended. The control of these diseases must be carried out diligently by public-health workers, private physicians, and the people in order that this menace may be reduced.

The field of public health is continually expanding, so that to-day it is not only concerned with the elimination and control of communicable diseases which are an epidemiological menace to society as a whole, but also it is designed to prevent premature crippling and invalidism, and must plan means of lengthening the life of the people. Degenerative diseases of middle age, such as heart-disease and cancer, cause too great a loss to society by the removal of people from active work just at the period of their maximum usefulness. Future attention must be concentrated to a greater extent on both the therapeutic and preventive branches of the new field of geriatrics (study of degenerative diseases).

BUREAU OF LOCAL HEALTH SERVICES.

J. S. CULL, B.A., M.D., D.P.H., DIRECTOR AND ASSISTANT PROVINCIAL HEALTH OFFICER.

The Bureau of Local Health Services is an administrative breakdown for the purpose of directing certain technical programmes and phases of public-health activity in the Province. In this capacity it is responsible for the supervision of Public Health Nursing, Local Health Officers, School Medical Services, Notifiable Diseases, full-time Health Services, Preventive Dentistry, and Public Health Engineering. In all of these fields the year 1941 was a very active one. The continuation of the war has created additional problems, and it is becoming more evident all the time that existing health services at both Provincial and local levels must be stretched and broadened more than ever before if a reasonable standard of civilian health is to be maintained. This necessary stretching of services in effect has meant that considerable time has been spent in analysis and critical appraisal of existing policies and procedures, and new planning in the light of changing conditions. There is no doubt but that the public-health workers mentioned in the following subsections of this report are imbued with a sincere desire to provide the most effective service possible for the group of people served by them. A very friendly spirit of co-operation has been evidenced in all discussions and planning throughout the year. There were a number of events and changes which highlighted the year 1941, and these will be referred to in the subheadings which follow.

PUBLIC HEALTH NURSING.

The report for the year 1940 drew attention to the fact that an effort had been made to broaden the view-point of the public-health worker throughout the Province

and also to re-establish the whole Public Health Nursing programme on a more generalized basis. This policy has been continued during the year 1941 with very gratifying results. Not only can definite progress be reported, but there has also been a satisfying improvement in the quality of the work. There is no doubt but that the various Public Health Nurses realize how important their work is on the home front in the maintenance of civilian health, and every effort is being put forth by them to aid in their way in Canada's all-out war effort.

In general, it would appear that communities, and also civic and municipal officials, are becoming more health-conscious and desirous of making efforts, not only to maintain the health of their communities, but also to improve it as much as possible. A healthy community is an asset to be desired at any time, but more particularly in the type of war being fought to-day, when such a large number of individuals are employed in ship-building, air-craft manufacture and assembly, and other war industries. Indicative of this increasing health consciousness is the request from various centres for information concerning the establishment of a Public Health Nursing Service. At the present time, and for some months now, the demand for Public Health Nurses has far exceeded the supply.

Experience has repeatedly shown that a lowering of standards for personnel in war-time is poor administration, unless conditions are such as to compel it as a last resort. It is still felt that, unless only for a temporary period of a few months, it is essential to continue to employ as Public Health Nurses only those individuals who have actually taken special training in public health, in addition to their regular hospital nursing training. Only in this way can the most efficient use be made of the nurses' time, and also the most effective use of those potential and technical services already made available through the various Divisions of the Provincial Board of Health.

The annual get-together at Easter of Public Health Nurses and full-time Public Health Officers, which for years has been known as the "Refresher Course," was not held in 1940. However, in 1941 the policy was re-established, with the difference that the meeting was held in Victoria under the title of "Institute for Public Health Workers." Continuous education of personnel is of great importance, and it is hoped that it may be possible to hold these meetings annually from now on. Last year an effort was made to review as far as possible the whole field of public-health activity, with special reference to the place of generalized public-health nursing. In view of the fact that a number of the Public Health Nurses who attend come from more or less remote areas of the Province, every effort is made to bring to them the latest information and opinions to assist them in providing the most effective service to the people of their particular communities.

At the meeting last year all of the speakers were from the technical staff of the Provincial Board of Health.

Reference was also made in last year's report to the appointment of a Director of Public Health Nursing. Experience during the year past has shown the wisdom of such an appointment. Miss Kilpatrick during the year has made a number of trips throughout the Province to visit the Public Health Nurses in their own fields, and to discuss with them their problems, and to bring to them such guidance and advice as might be necessary. Having such a liaison officer has resulted in much more effective correlation of all phases of activity, and particularly, in so far as the technical divisions of the Provincial Board of Health are concerned. A copy of the report of the Director of Public Health Nursing is appended herewith, and gives some idea of the variety of the work involved, as well as a picture of supervision in relationship to Public Health Nursing.

During 1941, Public Health Nursing Services were established in four new areas throughout the Province—namely, Courtenay, Creston, Kimberley, and Coquitlam.

The revision of individual record forms in the public-health record system, which was commenced in October, 1940, had to be stopped temporarily after the revision of the school health record had been completed. It is hoped that it may be possible to recommence the revision of these forms in the near future.

The "News Letter" from the Provincial Board of Health to the Public Health Nurses throughout the Province, which was also mentioned in last year's report for the first time, has been continued during the last year and has proved to be of very definite value as a means of exchanging ideas and information. In it are published not only instructions and changes in policy, but also articles or book reviews written and submitted by the Public Health Nurses themselves. It is hoped that this year may see an ever-greater development in this publication in so far as more contributions from the Public Health Nurses are concerned.

With the coming of the war to the Pacific, Public Health Nurses have been called upon to take an active part in the organization and preparation for any emergency that might develop. Not only have they organized and, in many cases, conducted classes in first aid and home-nursing, but they have also made splendid contribution, and given valuable guidance, to the A.R.P. organization within their local communities.

SCHOOL MEDICAL SERVICES.

The improvement in the quality of School Medical Services which was referred to in last year's report has continued during the year past. However, the decreasing number of physicians available for civilian requirements would appear to be rapidly approaching a point when it will become necessary to make some reduction in the frequency of examinations of school children by School Medical Inspectors.

In addition to the revision of the school health record which was referred to above, a new annual report form for School Medical Inspectors was drafted and put into use during the year. This new form constitutes a somewhat radical departure from the type of report form previously in use, but in the long run will, it is felt, give a much more practical picture of the health status of the school children than was formerly the case. Instead of having various types of defects for each school reported, it is now possible for the School Medical Inspectors to categorize the pupils of the various grades, in so far as their health status is concerned, and report the number of children in each category from each of the school grades. In addition, provision is made for the reporting of the amount of immunization against preventable disease that has been carried on prior to the existing school-year and during the school-year in progress. Also, the School Medical Inspector now reports the number of teachers, janitors, bus-drivers, etc., that are employed by each local School Board, and the number of these that have been examined, as well as their health status, and whether or not they have had an X-ray of their chests during the past two years.

The new report form was introduced in September and a detailed explanatory letter was sent out to each School Medical Inspector throughout the Province. The comments which have been received from a considerable number of these physicians have been very gratifying indeed. There would appear to be a considerable degree of unanimity of opinion that this new report form is practical, and that the time and effort spent on its revision were worthwhile.

Through collaboration with the Department of Education, a letter was sent to all principals and teachers of schools throughout the Province explaining the use of the new school health record form, as well as recommendations concerning filing and what was to be done with the cards when the pupils transferred from one section of the Province to another. The co-operation of school authorities has been very fine.

From evidence at hand, it would appear that there is a rather considerable increase in the amount of immunization which has been carried on among school-age children, and it is hoped that this will become not only more extensive in this age-group, but be still more extensively applied to the pre-school age-group during the coming months.

EPIDEMIOLOGY AND NOTIFIABLE DISEASES.

A table on pages 129 to 133 shows the number of reported cases of notifiable diseases. The total number reported—namely, 40,019—represents a very considerable increase from that reported during the previous year. In 1940 only 19,238 cases were reported. Some of the increases which were expected to have occurred earlier have now taken place. For instance, cases of cerebrospinal meningitis rose from twenty-four in 1940 to 138 in 1941. These figures are for civilian population only. The number of cases in the Armed Forces was less than one-tenth of this number. The reported cases of influenza showed a drop from 4,277 to 2,602. However, this is in no way an accurate indication of the influenza situation, since a very large number of cases are never seen by a physician and the percentage reported can be very low. Scarlet fever, septic sore throat, and chicken-pox remained at about the same level. There was an increase in the reported number of cases of whooping-cough from 957 in the previous year to 1,264 for 1941. Again, it is possible to report that not a single case of smallpox occurred during the year, and it is hoped that this satisfactory situation may continue.

Unfortunately, diphtheria, a preventable disease, has again shown a considerable increase. Last year there were ten cases in all reported, but for 1941 a total of twenty-three cases was reported. In addition, the majority of these cases were among adults, which shows the need for continued emphasis on immunization procedures.

The forecast of a possible rise in the reported number of cases of rubella (German measles) took place during 1941 when 8,944 cases were reported as against 524 for the year 1940. Fortunately, this disease usually leaves no serious after-effects, but may incapacitate adults for at least the isolation period of eight days, and sometimes longer. Increased absenteeism of this type, even although only because of a mild disease, can reduce very considerably the effectiveness of man-power and woman-power both in the Armed Forces and also among civilian and industrial workers.

Reported cases of measles also showed a very considerable increase. In 1940 there were 3,217 cases reported, and for the year 1941 the total has risen to 15,562. Approximately one-third of this number occurred in the Greater Vancouver area and the remainder were scattered throughout the Province, with no great concentration of numbers in any one centre.

The reported cases of cancer have risen from 1,080 in 1940 to 1,178 for 1941. There has been some improvement in the reporting of this disease by physicians throughout the Province, although it is difficult to say exactly how much as yet. A new questionnaire form was put into operation last year jointly between the Cancer Committee of the British Columbia Medical Association and the Provincial Board of Health, in December, 1941, and at the end of 1942 it is hoped to be able to make a rather complete analysis of these cases which have been reported on the new forms. There will also, at that time, be a more accurate indication of how much improvement in reporting has taken place during the previous two years.

Apart from the increase referred to above, perhaps the most spectacular was the epidemic of poliomyelitis which occurred in 1941. In 1940 only five cases were reported, but during 1941 a total of fifty-four cases occurred. The first case was reported during the first week in June, and there were no subsequent cases until the middle of July. The number of cases recorded each week increased until a peak was reached during the last week in August, when seven new cases were reported during that week. From

there, the number of cases reported decreased rather rapidly, with an occasional increase, and the final case was reported during the last week of December. The outbreak was characterized by the fact that, except for one local area, there appeared to be no very readily proven contact between the individuals who developed the disease. Cases were reported from widely separated areas of the Province as having occurred at the same time, which pretty well ruled out any possibility of proving much with regard to the mode of spread.

The only exception to this was the occurrence of seven cases in the vicinity of Armstrong which appeared to bear a more or less direct relationship to each other, and concerning which there has been a very splendid report published in the Canadian Public Health Journal. This particular localized outbreak was investigated by Dr. J. M. Hershey, Director of the Okanagan Valley Health Unit, who has written the published report. These seven cases near Armstrong were the largest number of cases which occurred at any one particular centre in the Province. The other cases were scattered quite widely throughout the whole Province, usually there being no more than one or two at any one particular centre. Of the individuals becoming ill with this infection, ten were of pre-school age, twenty-six were school children, and nineteen were adults. The amount of disability occurring during the acute stage of the disease ranged all the way from only a weakness of an upper or lower limb to a rather complete paralysis involving the respiratory muscles, which required treatment by the use of the iron lung. As far as is known, only one death occurred during the acute phase of the disease in these individuals.

The incidence of typhoid and paratyphoid fever was about the same as the previous year, there being fifty-nine cases in all reported for both diseases. In this connection there is room for a tremendous amount of education of the public concerning the use of safe water, safe milk, and proper food-handling methods.

The need was mentioned last year for an Epidemiologist on the staff of the Provincial Board of Health, and, under present conditions, such a staff member is needed more than ever.

An endeavour was made to secure a person specially trained in the public-health aspect of the dairy industry, food handling, and general sanitation, but, so far, it has not been possible to secure such a person. It is hoped that the time may not be far distant when there may be available for service in this Province such a specially qualified person whose entire time can be devoted to the problems of proper handling of milk, food-handling methods, and the education of employers and employees concerning these important aspects of public health.

FULL-TIME HEALTH SERVICES.

The satisfactory establishment of the Okanagan Valley Health Unit for providing full-time health services to the City of Kelowna and surrounding rural territory was mentioned in last year's report. Continued educational and organizational work was carried on during 1941, and before the close of the year the area served by the Health Unit had been very considerably extended. A mutually satisfactory plan was worked out whereby all the area from just south of Oyama and including Kelowna and surrounding territory, Summerland, Penticton, and Naramata received the benefits of full-time health service. The staff of the Health Unit to serve this territory consisted of the Medical Director as Health Officer for the whole area, four Public Health Nurses, two full-time Sanitary Inspectors, and a statistical clerk. Peachland and Westbank were not included in the area served, but it is expected that the service will be extended to this area in the very near future. A very considerable amount of improvement has been recorded during the past year as a result of the services provided by the Okanagan

Valley Health Unit to the City of Kelowna and the surrounding rural territory. Nothing but praise and favourable comments have been heard from every one concerned. The year 1942 will probably see still greater advances made. A great deal of credit belongs to Dr. J. M. Hershey, the present Director of the Unit, for the splendid leadership which he has given, and also for the organization work he has carried on in such a way as to gain the confidence of not only civic and municipal officials but also the public in the area served by the Health Unit. Being within relatively easy reach of the Coast, it is hoped that the Okanagan Valley Health Unit may be developed as a training centre for new personnel as well as established and recognized as one of the model Health Units in not only British Columbia, but also Canada as a whole.

The Peace River Health Unit continued to do splendid work in that remote section of the Province, which looks as if it might become a veritable hive of activity based on the development already taking place up there. A very signal honour was brought to British Columbia when early in 1941 the announcement was made that the Peace River Health Unit was the winner of one of the two awards made to Western Canada in the 1940 Canadian Rural Health Conservation contest. Such awards are made not necessarily to the healthiest communities, but rather for the effectiveness with which the community health problems are being met. The judging is carried out following the submission of a detailed, fact-finding questionnaire to a group of carefully selected health experts. Each Health Unit is appraised on what health measures it takes: (1) To provide and safeguard its water-supply, (2) to furnish adequate and safe sewage-disposal, (3) to reduce infant and maternal deaths, (4) to combat tuberculosis and syphilis, (5) to protect its citizens against other communicable diseases, (6) to ensure healthy children, (7) to protect and safeguard its milk and other foods, (8) to promote effective co-operation with its physicians and dentists in furnishing necessary services to all who need them, and (9) to enlarge and improve its lay understanding of ways and means of preventing sickness and death and of maintaining good health. The contest is sponsored jointly by the Canadian Public Health Association and the American Public Health Association, with the assistance of the W. K. Kellogg Foundation of Battle Creek, Michigan. Health Units from all the Provinces in Canada have entered the contest during the past four years, and this was the third year that the Peace River Health Unit had been entered. The fact that an award was granted to this entry from British Columbia is indicative of the fact that a very high standard of programme and service is being rendered to the people of this section of the Province.

The increase of population which is taking place in Prince Rupert and district, both because of troops and civilians, is resulting in a very considerable number of health problems in that area. Already, the normal services of the city are heavily overtaxed and consideration will have to be given very shortly to the possible establishment of a full-time Health Unit in that area to cope with the general situation and to control and deal with the health and sanitary problems already there to prevent the outbreak of a disease of epidemic proportions.

During the year a number of discussions were held between senior officials of the Provincial Board of Health and the staff of the Sumas-Matsqui-Abbotsford Health Unit, which were in the form of an examination and appraisal of the programmes being carried on at the present time in that area and their effectiveness. As a result of these discussions, the whole programme carried on by the staff of the Health Unit was more or less completely revised and broadened in order to bring it more in line with accepted policies and procedures in effect in other areas of the Province. Already, there is not only an increased effectiveness of the work but also an improved acceptance of the public-health programme by the people of the Municipalities of Sumas and Matsqui and the Village of Abbotsford.

The Metropolitan Health Board for the Greater Vancouver area has completed another year of effective health-work and has continued to prove that intermunicipal co-operation for public-health administration is not only efficient but much cheaper than if each participating area were to endeavour to carry on as full and complete a programme by themselves.

The increasing health-consciousness of the people is making it easier to discuss with them plans for both Public Health Nursing Services and also full-time Health Units. However, at a time like this when it is necessary to spread existing services as thinly as possible in order to serve the largest group of people, the shortage of physicians trained in public health constitutes a real problem, with the result that it is practically impossible to meet the requests of districts for full-time health services. At the present time there is no one from the Province taking postgraduate training in public health, although it is hoped that at least one physician may take such training next year. The disclosure, through examination of recruits for military service, of physical defects which in many instances could have been prevented has shown more clearly than anything else the need for still greater expansion in preventive medicine and public-health activity. Also, the provision of adequate medical and dental care for the Armed Forces has served to make a very considerable percentage of the population realize more than ever before the value and wisdom of proper medical care, and the necessity for some plan whereby such care can be provided and made available for the population at large.

PUBLIC-HEALTH EDUCATION.

As was done last year, a number of sound and silent health films were screened with a view to purchasing those that might be used effectively. However, as has been mentioned before, the number of available films which approach the whole field of public health from other than the angle of class-room teaching are few and far between. The films that are available at the present time were loaned out on a number of occasions during 1941, as was also the projector. The sound motion-picture film which was produced through the Division of Venereal Disease Control has continued to receive outstanding comments from public-health authorities of the North American continent. It becomes more clear as time goes on that to have the type of film desired, and one that will be applicable to conditions in the Pacific Northwest, it will be necessary to produce a number of films dealing with the subjects on which this type of educational material is urgently needed.

A number of specially chosen reference books have been added to the library during the year just passed, and all of the reference books are, of course, available for loan for short periods to physicians, Health Officers, and Public Health Nurses. A few small-sized slides were made, but it is expected that more will be completed during 1942.

The requests for health literature of all types have continued to grow, but this year it is becoming more difficult to meet the demands. Much of the literature available from life insurance companies and also the Federal Department of Health has been extensively curtailed. Through the continued kind co-operation of the Canadian Welfare Council, the distribution of letters to expectant mothers has continued. During 1941, 11,259 prenatal letters were sent to 1,251 expectant mothers who requested this service. This is a reduction from last year, but is explained by the fact that in September arrangements were completed with the Greater Vancouver Metropolitan Health Committee for the local distribution of prenatal letters, and also of postnatal, pre-school, and school letters, to the people requesting them from Vancouver, rather than from the Central Office of the Provincial Board of Health. In spite of this arrangement, the number of mothers who requested the postnatal series increased to 4,363 and 52,356 individual letters were sent out. As in previous years, the requests

for the letters covering the pre-school and school ages of children have not been as numerous as might be expected. Last year 1,084 pre-school letters and 325 school letters were sent out. An effort has been made during the past year to have more parents made aware of this particular educational material, and it is hoped that 1942 may show a very substantial increase in the distribution.

PREVENTIVE DENTISTRY.

The continuation of the war has interfered with the development and maintenance of certain specialized technical fields. Perhaps one of the first to be affected was the plan for a widespread programme of dental health education, and co-ordinated clinics throughout the various centres of British Columbia, operating on a uniform basis. As was mentioned in last year's report, the Provincial Board of Health was successful in obtaining a specially trained and qualified dentist as Director of Preventive Dentistry. However, this dentist left to join the Canadian Army Dental Corps in July, 1941, and since that time it has not been possible to secure a young dentist with the special training and qualifications which would make him suitable for the programme of preventive dentistry.

During the time that Dr. Billingsley was with the Department he carried on a number of local dental clinics to the satisfaction of all concerned, and also had commenced to lay the groundwork for a programme of dental health education. Since his departure it has not been possible to make any further progress along this particular line.

The local dental clinics which have functioned in a number of centres throughout the Interior of the Province have continued fairly well without interruption, although there have been some which have been forced to cease operation due to the shortage of available local dentists. In other areas, local committees have been able to arrange to have the dentist from a neighbouring community come in and carry on the clinic work. Financial assistance has been given by the Provincial Board of Health to these local clinics when they have been organized upon the plan as outlined in last year's report. Briefly, this means that the clinic must be so organized as to operate on an annual basis if at all possible, the service must be offered to all the children of the lower grades in school, and not to certain selected ones. The clinic work must be commenced with the first and second grades of school children, and these grades must be finished before proceeding with any higher grades, and finally, a definite ratio of pre-school children must be included in the clinic. It is gratifying to note that practically all the local clinics have made a very serious effort to operate on this basis, and there have been received a number of comments from local committees who have become convinced that the plan, as outlined, is an effective one, and also is one that is not difficult to put into practice.

The special type of report form which was mentioned in last year's report has been completed with considerable detail by most of the dentists who have been carrying on the work in the local clinics. No effort has as yet been made to tabulate or analyse the information available, but it is hoped that some time during 1942 this can be accomplished. It will then be possible to compare one district with another, not only with regard to the dental health of the children as found at the time of first visiting the clinic but also the amount of work that was necessary in each district. The very surprising number of dental defects discovered upon examination of recruits for military service indicates the need for a much more widely spread practice of preventive and therapeutic dentistry. It follows that every effort must be made to not only expand the field of preventive dentistry as much as possible, but also to assist in the development of a basic plan whereby a dental service may be made available to all those of the population who may require such treatment. This must be done if the health of our

people is to be maintained at the highest level possible, and at the level which should be the rule, and not the exception, in a country such as ours, with the scientific information which is available at the present time.

PUBLIC HEALTH ENGINEERING.

The year 1941 has been an extremely busy one for Mr. Bowering, our Public Health Engineer, in charge of sanitation and its engineering aspects. The continuation of the war has created a number of sanitary problems involving safe water-supplies and adequate sewage-disposal, with particular reference to the construction of various types of military camps throughout the Province. This has necessitated numerous discussions between the technical staff of the Provincial Board of Health and hygiene officers and engineers of the three Armed Forces. Shell-fish sanitation has been given a great deal of consideration during the year past, and it is hoped that a new set of regulations covering this phase of the work may be available shortly. The provisions of safe public water-supplies, and the protection of them from contamination, have also received much attention, and the fact that there is an increasing number of communities who are chlorinating their water-supplies is indicative of the progress which has been made during the past year in convincing civic and municipal authorities of the fact that surface-water supplies are potentially dangerous and need this treatment to render them safe. The full report of the Public Health Engineering Division is appended herewith, and is a splendid portrayal of the volume of work by the Public Health Engineer and the many advances that have been made in the short time that he has been with the Department—only a little more than one year. The plans for 1942 that are discussed in the report give an indication of the approach to various problems that will be followed during the coming months.

SUMMARY REPORT OF THE DIVISION OF VITAL STATISTICS.

J. D. B. SCOTT, B.A., B.COM., DIRECTOR.

The avalanche of additional work in the Division of Vital Statistics due to the war was fully set forth in last year's report. This year the work continued to grow in volume.

The additional work has been marked by an increase in total registrations and the number of marriage licences issued and in the work done for the military authorities. To December 31st, since the outbreak of war, the Division of Vital Statistics has assisted the Federal Dependents' Allowance Board in searching 24,738 registrations in order to check the statements made on applications for allowances. In addition, 4,656 verifications of births, deaths, and marriages were issued in 1941, for either recruiting purposes or for proof of dependency, for dependents of men serving in the Armed Forces.

The Division of Vital Statistics continued to investigate and report to the Dependents' Allowance Board on delayed registrations of births, legitimations of birth, and adoptions of children by men in the Armed Forces. These services were done free of cost and, as such, should be considered as one of the Division's contributions to the war effort.

The Division continued its co-operation with the other Divisions of the Provincial Board of Health in the matter of giving technical advice on statistical presentation. In addition, the Division assisted the Divisions of Tuberculosis Control and Venereal Disease Control respectively in the compilation of the data and format of their annual reports and other statistical tables required from time to time. In this way the Division of Vital Statistics is helping to carry out the policy of co-ordination in public-health matters as determined by the Provincial Health Officer.

REPORT OF THE DIVISION OF LABORATORIES.

C. E. DOLMAN, M.B., B.S., D.P.H., PH.D.

INTRODUCTORY REMARKS.

The year 1941 was easily the most strenuous in the experience of the Division. Not only was the upward trend in total tests maintained, but an unusually heavy amount of investigational work was required, which does not feature in the recorded summary of work done. Moreover, early in the year the Division took over, on behalf of the Provincial Board of Health, full responsibility for the distribution of biological products throughout the whole Province; while towards the end of the year it assumed the task of carrying out the laboratory work connected with the Red Cross Blood Donor Clinic. These undertakings necessitated the immediate provision of at least some portion of that extra accommodation for which we have clamoured for six years; and 1941 was marked by protracted negotiations leading finally to addition of an adjacent cottage to the two rickety structures which had housed the Division of Laboratories since 1931. In the course of absorption of this extra working-space a redistribution of staff was made, affecting a large proportion of the members, which required careful planning beforehand, forbearance and patience during the moving-in process, and then a ready adaptability on the part of all concerned.

At the main laboratories in Vancouver, 128,280 tests were performed in 1941, an increase of 2.7 per cent. over the 1940 total of 124,942 tests. Of this number, 19,548 tests, or 15.2 per cent., related to specimens reaching the laboratories from outside Vancouver. Formerly, less than 10 per cent. of tests done in the main laboratories were concerned with specimens from out-of-town sources, and it is interesting to note the increasing percentage of work done for physicians, health officials, and institutions outside the city. The combined total of tests performed in the six branch laboratories at Victoria, Nanaimo, Kelowna, Kamloops, Nelson, and Prince Rupert was 38,753. In all, 167,033 reports relating to the diagnosis and control of communicable diseases were sent out during the year by the Division. As already stated, in addition numerous unrecorded tests and functions were performed. The numbers of the various types of examinations made in the Vancouver laboratories are set forth in Table I., while Table II. similarly summarizes the work of the various branch laboratories. Comments will follow which bear on the trends in numbers, and the general significance to public health, of certain of these types of tests.

TESTS RELATING TO VENEREAL DISEASE CONTROL.

The year showed no sign of any levelling-off in the upward trend of serological tests for syphilis. Over 45,000 blood specimens were tested in the Vancouver laboratories, and over 17,000 in the various branch laboratories, for evidence of syphilis. Towards the end of 1941 it became apparent that early in the new year Kahn testing facilities would be taxed to a far greater degree, through the impending decision of the R.C.A.F. to request a routine test on every recruit; through an increasing interest evinced by the Army and Navy in such tests; and through the accelerated rate of "natural increase" in Kahn testing, for which last factor the educational efforts of the Division of Venereal Disease Control were no doubt mainly responsible. In all, the Division as a whole reported on 114,468 tests relating to the diagnosis and control of syphilis and gonorrhœa, a figure representing 69 per cent. of all reports sent out during 1941. Similarly high percentages have obtained each year since the Vancouver laboratories were created in 1931, and serve to emphasize how intimately dependent upon the work of the Division of Laboratories are the activities of the Division of

Venereal Disease Control; a fact which is perhaps too seldom publicly acknowledged or proclaimed.

Reference was made in the preceding annual report to the main laboratories having begun to take part in a survey of the scope and accuracy of serodiagnostic facilities for syphilis offered by the different Provincial laboratories throughout Canada, which was launched late in 1940 by the Laboratory of Hygiene, Department of Pensions and National Health, Ottawa. The survey was completed during the summer of 1941, by when 120 specimens of serum had been examined and reported on, according to the three types of precipitin tests then in use at the Vancouver laboratories—namely, the standard Kahn, the Kline diagnostic, and the Hinton tests. Other samples of these same specimens were examined in the various laboratories throughout Canada which participated in the survey, while a control series of the same group of specimens was tested in one of the best-known serodiagnostic testing laboratories in North America, which operates under the United States Public Health Service. Each participating laboratory was furnished with a detailed report showing how its findings compared with those of the control laboratory. It is gratifying to report that our main laboratories made a very good showing in this survey, the few discrepancies between its findings and those of the control laboratory being of a relatively minor nature, and such as might be expected in view of many of the specimens having been selected because their reaction fell in the “doubtful” range. Although no official statement was forthcoming from the Laboratory of Hygiene to indicate our rating in comparison with other Provincial laboratories, it was learned unofficially that we were numbered among the best.

Despite this satisfactory record, investigations were constantly being made by the members of the serodiagnostic department, under the supervision of Miss Allan, our Serologist, into the possible causes and significance of the occasional discrepant result; and it is only regretted that the heavy pressure of increasing routine tests has not yet made it possible for Miss Allan to give a higher proportion of her time to the investigational side of this work. Moreover, although there are good arguments in favour of our adopting the Kolmer complement-fixation test in place of one of the two supplementary precipitin tests now carried out on all Kahn-positive and Kahn-doubtful specimens, this change must be deferred until additional staff can be taken on to cope with the greatly increased work which would be entailed by replacement of the Hinton test, for instance, by the much more complicated Kolmer-Wasserman test.

Valuable statistics bearing on the incidence of syphilis among various civilian and military groups have been accumulated by the Division for several years, and it is hoped that the next annual report may include a summary of our findings over the past decade. The laboratory, which is the court of final appeal in the diagnosis of most infections, so often provides also the first clue to the presence of syphilis that among the most reliable indices of the distribution of this disease in the community must be reckoned the percentages of positive Kahn blood tests found by the laboratory in the course of mass or routine surveys. While this Division would be the last to urge that the final diagnosis of any infection should rest upon a laboratory test alone, the positive serodiagnostic test for syphilis has, with rare exceptions, an almost categorical significance; and the Division of Laboratories has first contact with such findings, in relation to all sections of the community. It should be recalled that in the Vancouver laboratories over five-sixths of the blood specimens for Kahn test are sent in by private physicians, and that not more than one-half of all doubtful and positive readings are obtained on specimens sent in by the Vancouver Clinic of the Division of Venereal Disease Control.

For the past three years copies of every doubtful or positive Kahn report leaving the Vancouver laboratories have been forwarded weekly to the Director of the Division

of Venereal Disease Control. In addition, a monthly summary of the positive sero-diagnostic tests for syphilis obtained at the Victoria branch laboratory, giving names of patients and their physicians, is forwarded to the Division of Venereal Disease Control through the Vancouver laboratory. The Division of Venereal Disease Control is thus enabled to carry out important follow-up work, while the physician's knowledge that positive laboratory findings on his cases are being referred to that Division has no doubt largely contributed to the much improved rate of reporting. The reminder printed on the laboratories' official report forms that venereal diseases are notifiable under the "Venereal Diseases Suppression Act" has, no doubt, also promoted better reporting to the Division of Venereal Disease Control. However, there remains much to be said in favour of maintaining or even expanding the statistical interests of the Division of Laboratories in this field. Before the war, in Denmark, which had a most enviable reputation for low incidence of syphilis and gonorrhœa, the laboratories of the State Serum Institute at Copenhagen maintained a complete serological and treatment record of every syphilitic in the country. Three whole-time clerks were employed for this work. Yet in the Vancouver laboratories, which annually performs considerably more blood Kahn tests than were formerly done for the whole of Denmark, the unadvertised, but nevertheless valuable efforts at record-keeping devolve upon hard-pressed technicians. This work will have to be given up if our Kahn-testing department's turnover continues to increase without compensating additions to the staff.

There was a slight decline in the numbers of direct microscopic examinations for gonococci made by the Division. The branch laboratories and the Vancouver laboratory shared in this decline, which was too slight, however, to be regarded as due to any change in incidence of gonorrhœa. The Vancouver and Victoria laboratories continued to offer facilities for gonococcus culture, and both recorded an increase in this type of test. It seems possible that the widespread use of the sulpha drugs in treatment of gonorrhœa may result in some reduction in the numbers of smears reaching the Division, because even although chemotherapy may not affect the incidence of this disease its average duration can now undoubtedly be shortened, and therefore fewer smears are likely to be taken in future from each case.

However, the first effect of these sulpha drugs is often to dry up the discharges of infected patients without necessarily rendering such individuals non-infective. Under such circumstances, the cultural method of diagnosis may well offer even greater advantages over the direct microscopic examination of smears than those already recognized, and hence perhaps the tendency of clinicians of the Division of Venereal Disease Control, to whom alone facilities for culturing were extended, to resort to culturing methods at an earlier stage of infection than was originally agreed upon. Certain difficulties of interpretation arose as a result of this tendency. Especially welcome, therefore, was the invitation extended to the Director to address the annual staff meeting of the Division of Venereal Disease Control, held in Vancouver on April 19th, 1941, on "The Bacteriology of the Gonococcus, with Special Reference to the Cultural Method of Diagnosis." This occasion provided an opportunity for a thorough discussion of the difficulties of technique encountered and of the proper interpretation of findings. It was agreed that only by close correlation of work from clinical, epidemiological, and laboratory standpoints could the significance be determined of, e.g., the atypical or pseudogonococcal cultures sometimes isolated from the earlier cases. Both Divisions remained too preoccupied during 1941 with the increasing pressure of routine affairs to find much time for this or for any of the numerous other investigations they might so profitably pursue together; but an interchange of visits was made during the year by several members of the staffs of the two Divisions, which proved mutually beneficial.

AGGLUTINATION TESTS.

A considerable rise occurred in the number of agglutination tests performed in the Vancouver laboratories, the total being 9,495 compared with 8,186 for 1940, or an increase of 16 per cent. This is largely attributable to the occurrence of outbreaks of typhoid fever at Kimberley and Steveston, as well as to sporadic cases of enteric infection throughout the Province, in the diagnosis of all of which the laboratories were intimately concerned; and also to the increasing tendency of practising physicians, medical health officers, and the medical personnel of the Armed Forces to requisition routine blood-agglutination tests with a view to excluding typhoid or paratyphoid fevers, and brucellosis or undulant fever. The value of such routine tests as a means of detecting unsuspected cases or carriers of typhoid or paratyphoid infection is very questionable; and when the tests are performed on healthy nursing personnel on the staffs of large hospitals, all of whom have previously received T.A.B. vaccine, the practice may become as superfluous as the findings may be confusing. It is gratifying to record therefore that both the Vancouver General Hospital and St. Paul's Hospital have now ceased to requisition routine Widal tests on their nursing staffs. Any extension of such discernment among the medical profession at large would be appreciated by the Division of Laboratories.

Contrary to the general trend, a further decline occurred in the numbers of tests for *B. dysenteriae* agglutinins, which indicates a growing recognition of the futility of relying upon agglutination tests in the diagnosis of bacillary dysentery, and of the need instead to resort to stool culture. One physician who had apparently been in the habit of requisitioning for dysentery agglutinins to be sought in all his patients, was contacted, and thereafter kindly refrained.

Unlike the main laboratories, the branch laboratories registered a marked fall in the combined total of blood-agglutination tests performed. This was entirely due to the Victoria laboratory being compelled, by the pressure of more urgent demands, to cease carrying out the tests for *Brucella* agglutinins, which it had instituted during 1940 as a routine measure on all Kahn blood specimens. The measure had the desired effect of promoting interest on the part of the Victoria medical profession in brucellosis. This disease would appear to be at least as common in Victoria and vicinity as it is in the Greater Vancouver and Fraser Valley areas. Of course, when duly requisitioned, *Brucella* agglutinins continue to be looked for in blood specimens in the Victoria laboratory.

Early in the year, in consultation with the Provincial Health Officer, a means was devised for encouraging better reporting of the enteric group of diseases and of brucellosis and for bringing certain public-health aspects of these infections to the attention of physicians. Letters headed respectively "Notification of Typhoid Fever and Release of Convalescents" and "Notification of Brucellosis (Undulant Fever)" were composed and mimeographed. Copies of the appropriate letters were sent out by the Vancouver and Victoria laboratories to all physicians from whom specimens were received which proved positive by culture for micro-organisms of the typhoid-paratyphoid-dysentery group, or for *Brucella abortus*; or, alternatively, which showed specific agglutinins to significant titres.

Apart from blood-agglutination tests, specific agglutinins against *Brucella abortus* continued to be sought, as in previous years, in the whey of raw-milk samples brought to the laboratories by inspectors of the Greater Vancouver Metropolitan Health Committee. Further reference to these tests will be made later in the course of comments on milk and water examinations.

CULTURES.

The number of cultures for *Mycobacterium tuberculosis* increased from 337 in 1940 to 385. Cultural examinations for tubercle bacilli entail a heavy expenditure of effort, owing to the special media required and to the need for sometimes lengthy preliminary preparation of the specimens before they can be cultured. The increase largely reflects the late summer opening by the Dominion Government of the Coqualeetza Indian Hospital at Sardis for tuberculosis Indians. The Vancouver laboratories undertook to carry out, as far as their facilities permitted, the bacteriological work of this new hospital.

There was a marked decline in the number of swabs cultured for *Corynebacterium diphtheriæ*, but this was more than matched by the increased numbers of cultural examinations made for hæmolytic streptococci and hæmolytic staphylococci. Miss J. McDiarmid handled very efficiently the cultures for tubercle bacilli, for diphtheria bacilli, and for hæmolytic streptococci and staphylococci; and, in addition, carried out the guinea-pig inoculations and autopsies for tuberculosis and virulence tests of diphtheria bacilli. Many problems were encountered in these fields which merited investigation, but until additional technical staff becomes available it must suffice that Miss McDiarmid should satisfactorily cope with so heavy an assignment.

For many years, throat swabs for culture of diphtheria bacilli had been taken as a routine from all patients admitted to the hospitals in Vancouver. Detection of a carrier by this means was an extremely rare event, while the city often remained free from cases of diphtheria for many months at a time, doubtless owing to effective diphtheria toxoid immunization campaigns. On the other hand, scarlet fever, admittedly of a rather mild type, had been unduly prevalent in Vancouver for years, perhaps largely because of a regrettable lack of enthusiasm shown by Medical Health Officers and pediatricians for immunization with scarlet fever toxin. All this resulted in a reduced emphasis by physicians generally, and by hospital authorities in particular, on the taking of routine swabs for isolation of diphtheria bacilli, and a growing, albeit rather vague, interest in nasopharyngeal carriers of hæmolytic streptococci and staphylococci.

However, 1941 saw an extension of those migratory movements of the Armed Forces within Canada which, since the war began, have had unfortunate consequences from the public-health standpoint, at least in those areas such as British Columbia, where the communicable diseases have been on the whole of low incidence and virulence. Sporadic outbreaks and isolated cases of diphtheria, and the advent of a more severe type of scarlet fever, might have been predicted as a result of these population interchanges. At any rate, they appeared, and have probably given rise, in our midst, to new carriers of virulent diphtheria bacilli and hæmolytic streptococci. The former custom of taking routine throat-swabs for diphtheria bacilli from all patients admitted to hospitals should therefore probably be restored. Incidentally, the life-saving nature of the work of the Division of Laboratories is nowhere more in evidence than in connection with the diagnosis of diphtheria, especially in those instances where the true nature of the disease had apparently been unsuspected by those attending the case.

The proper reaction of the laboratories to the likelihood of more severe types of scarlet fever becoming endemic in British Columbia is harder to determine. A set of rabbit sera for grouping hæmolytic streptococci according to the Lancefield scheme was prepared by Miss Kerr, and the specificity and potency of her sera were verified by the Laboratory of Hygiene at Ottawa. Large numbers of strains isolated from swabs taken from normal throats and from scarlet fever cases were grouped by Miss Kerr. A very high percentage of these strains fell into Group A and were therefore potentially pathogenic for man. But it was thought undesirable to publicize the streptococcus grouping facilities of the main laboratories or to send out sera to the branch labora-

tories, since public-health administrative officials could not possibly place in isolation all carriers of Group A hæmolytic streptococci. Moreover, experience suggested that we might be overwhelmed with requests for group determination by those who are uninitiated in all laboratory problems save the relatively simple one of keeping the laboratory-worker busy. Grouping facilities for hæmolytic streptococci are hence held in reserve for the time being.

The Griffiths method of typing those hæmolytic streptococci which fall in Lancefield's Group A provides a further refinement of great potentiality to the epidemiologist. But the method is as yet too complex for routine adoption by the public-health laboratory, while administrative facilities for utilizing the information furnished are again not commensurate with the expense and trouble involved in obtaining the information.

Cultures for the typhoid-paratyphoid-dysentery group of micro-organisms increased in the main laboratories from 843 in 1940 to 1,155, while the combined total for the branch laboratories rose from 181 to 492, Victoria contributing 376 of this latter figure. The numerous media required for this type of culture-work make any increase in its turnover very onerous. But the information yielded by such cultures is often so important that the Division has felt bound to encourage the submission of stool specimens for culture whenever circumstances seemed to warrant this. In particular, stool cultures rather than Widal tests were urged upon the Army authorities, for whom it was agreed to examine chefs and commissariat personnel, to exclude carriers of enteric infection. Although the majority of these examinations for the Army were made in Vancouver, the Victoria laboratory handled its due share of them. The value of such cultures was exemplified in the case of one regiment, whose Officers' Mess desired to employ a former chef from the steamship "Normandie." On the first stool culture, a single colony of *B. dysenterix sonne* was noted. The next specimen proved negative, but several subsequent specimens showed large numbers of the foregoing organism. The chef, who was apparently a master of his art, gave no history of dysentery, past, recent, or present, but was nevertheless revealed a carrier by the Vancouver laboratory, much to the chagrin of the Officers' Mess, who seemed so captivated by his culinary gifts as to be almost ready to turn a blind eye to our reports. The chef was eventually rejected from the Army, and some months later was still excreting dysentery bacilli.

During the late summer, an outbreak of typhoid fever occurred among the Japanese population of Steveston. The cases presented some puzzling epidemiological features, but isolation of *S. typhi* from the outflow of a faulty septic tank serving the Steveston Hospital, at a time when one of the typhoid patients appears to have been an inmate, and the low level of community sanitation and personal hygiene locally prevailing, strongly points to this as the probable source of the outbreak. In the investigation of this outbreak, Miss D. E. Helmer, our Bacteriologist in charge of typhoid-paratyphoid-dysentery culture-work, co-operated to excellent effect with Dr. J. S. Kitching, Epidemiologist and Assistant Senior Medical Health Officer to the Metropolitan Health Committee of Greater Vancouver, and with various Sanitary Inspectors who, under his direction, brought in numerous samples for testing.

Miss Helmer continued to carry out typing of strains of *S. typhi* by Craigie's method, using specific Vi bacteriophages. On several occasions very valuable epidemiological clues were thus obtained and relayed to the appropriate authorities. It is a source of satisfaction that only recently, two or three years after the Vancouver laboratories pioneered in adapting the phage-typing methods to routine public-health laboratory practice, the laboratories of the Departments of Health of Ontario and Quebec should have begun to use these methods. Several State laboratories in the United States are also beginning to type strains of *S. typhi*. Our work in this field has brought many inquiries from other laboratories, while it is a pleasure to record that our association with typhoid phage-typing was largely responsible for Vancouver being chosen as a

centre for postgraduate work in bacteriology by the State Department of Health of New Mexico, which sent the senior technician of its State Laboratory at Albuquerque to study for a year under a Federal Social Security Grant at the University of British Columbia. Miss E. Taylor, B.A., who was awarded this grant, registered for courses in the Department of Bacteriology and Preventive Medicine, and has also been a welcome visitor on several occasions to the laboratories. We can only regret that members of our own staff are unable to enjoy equivalent opportunities.

BACTERIOLOGICAL ANALYSES OF MILK AND WATER.

The steady increase in numbers of milk and water examinations made by the Division continued during 1941. The larger number of tests on milk samples collected in the Greater Vancouver area probably reflect the growing local concern with the milk-supply problem. The laboratories' work on brucellosis has provided potent special arguments to add to the general ones respecting the need for compulsory pasteurization of the supplies of milk and milk products distributed in at least the larger municipalities. There seems no doubt that some municipal milk-supplies are improving, as judged by the percentages being pasteurized, and by the general level of bacterial counts, Victoria and Kelowna deserving particular mention in this regard. As yet, despite frequent recrudescences of interest in pasteurization displayed in the Vancouver area, no significant improvement has been noted in either the general level of bacterial counts or in the numbers of raw-milk samples showing *Brucella* agglutinins.

Since July, at the request of Dr. Stewart Murray, Senior Medical Health Officer of the Greater Vancouver Metropolitan Health Committee, the Vancouver laboratories have forwarded to him monthly summaries of the titres of *Brucella* agglutinins found in the whey of raw-milk samples brought in by city Inspectors for routine bacterial counts and coliaerogenes tests. Although these estimations had been made for investigational purposes for some years they were not listed in our annual reports, since no records of them were forwarded to health authorities. All special tests for *Brucella* agglutinins in whey performed since July, 1941, have, however, been included in our totals. These reports were requested in order that the high proportion of raw-milk dairies distributing a product which represents a specific public-health hazard might be brought home forcibly to the Metropolitan Health Committee of Greater Vancouver, and thence to the City Council. We have noted with interest the resolution passed by the Metropolitan Health Committee, urging the City Council of Vancouver to seek powers authorizing them to exclude from sale within the city all raw milk from herds infected with Bang's disease. While attempts to enforce such powers might well lead to troublesome litigation, in view of the difficulties involved in determining criteria for infectivity, this resolution should no doubt be regarded as better than none.

A large number of phosphatase tests were unofficially performed during the year as a check upon the efficiency of pasteurization. Present facilities of the main laboratories prohibit the routine performance of the phosphatase test, and these tests therefore do not appear in our totals. So far as the work has gone, however, it suggests that not all pasteurization conducted within the Greater Vancouver area can be regarded as efficient. Such findings emphasize the desirability of instituting routine phosphatase tests in Vancouver as soon as circumstances permit. The branch laboratory at Victoria carried out and reported on a limited number of phosphatase tests on the local milk-supply.

The increase in bacteriological analyses of water samples in the Vancouver laboratories is largely due to heavier demands upon our resources by Mr. Perry, District Engineer of the Department of Pensions and National Health, and by medical officers of the Armed Forces. Mr. Perry has expressed concern at the failure of all the major

coastal water-supplies to measure up to the standards of his Department for drinking water on "common carriers"; and the increased number of specimens from him reflects in part this concern, and in part his interest in water samples from oyster-beds along our coast-line. The greater demands of the Armed Forces are, of course, due to the larger number of camp-sites now distributed throughout the Province. The special examinations of water samples from intakes supplying the Greater Vancouver area, which were instituted as a war-time precaution in September, 1939, were continued during 1941.

Miss V. G. Hudson, our Bacteriologist in charge of milk and water examinations, has managed so far to handle very efficiently the increasing numbers of all these specimens, with only occasional assistance; but a continued upward trend may be anticipated, and if coupled with the possible adoption of routine phosphatase tests would certainly entail provision of at least a part-time assistant for her. The opportunities which her particular work affords of discussing the significance of the laboratories' findings with the Health Department Inspectors who bring in the specimens have been tactfully used and have doubtless borne fruit. We gladly pay tribute here to the conscientious and painstaking interest in their duties which these Inspectors display in the course of their visits to the laboratories.

We have had especially valued co-operation from Mr. V. Enman, the Sanitary Inspector assigned to Vancouver's milk-supplies, who has always been at great pains to follow up, to the full extent of his limited authority, the implications of the laboratory findings. His co-operation was most helpful in connection with the investigation of several outbreaks of staphylococcal food poisoning, the bacteriology of which was in the capable hands of Miss Kerr. In one instance of this sort, a doctor and his wife were taken violently ill two or three hours after drinking buttermilk at a lunch-counter. Samples of the buttermilk, of the butter, and of the cow's milk from which these products were derived, all showed heavy infection with hæmolytic staphylococci. The cow was said by veterinarians to be free from mastitis. Certain features of this episode were deemed of sufficient interest to warrant its being reported at the December meeting of the Laboratory Section of the Canadian Public Health Association, as a joint paper by Dr. Dolman, Miss Kerr, and Mr. Enman.

The increases in milk and water analyses recorded by the branch laboratories represent endeavours on their part to provide more consistent and liberal services of this type to the municipalities in which, or adjacent to which, they are located. All branch laboratories were circularized in September urging such an expansion in their services, and it was gratifying to be informed by many of them that increased facilities for milk and water analyses had already been spontaneously extended to their respective municipalities. Further expansion in these types of services will be encouraged.

DISTRIBUTION OF BIOLOGICAL PRODUCTS.

The task of supervising, on behalf of the Provincial Board of Health, the free distribution to authorized persons of certain biological products was greatly extended after February 1st, 1941, when the Division undertook, through the main laboratories, to assume responsibility for products distributed within the Greater Vancouver area. Previously the City of Vancouver, in conjunction with the Municipalities of Burnaby and Richmond, had maintained its own arrangements with Connaught Laboratories for supply of a rather restricted list of products to practising physicians and medical health officers. After lengthy negotiations it was agreed that in return for the sum of \$2,000, to be paid into the vote of the Division of Laboratories by the City Clerk of Vancouver, the Provincial Board of Health would make available to authorized persons within the Greater Vancouver area, on the same terms as were already prevailing throughout the rest of the Province, the same list of free products for the prevention and treatment of

certain communicable diseases. This arrangement forestalled any suggestion of discrimination against the City of Vancouver and, from the standpoint of the Provincial Board of Health, secured a desirable uniformity of policy throughout the Province. On the other hand, without any increase in the sums previously appropriated by the City of Vancouver and the Municipalities of Burnaby and Richmond for biological products, physicians and health officers within these areas can now obtain a considerably wider range of products.

Other benefits which are believed to have resulted since the laboratories undertook distribution of these products include a marked reduction in the wastage due to out-dating consequent upon requisitions for excessive amounts. Each requisition is now carefully scrutinized, and the right to reduce the numbers of doses or packages is exercised where circumstances seem to warrant. The vagueness with which many physicians word their requests for these products, and the inaccuracies of terminology which are frequently displayed, involve considerable correspondence, which it is hoped may not prove altogether unavailing in the long struggle to further the education of the medical and nursing professions in respect of the principles and practice of immunology. The extent of the extra work which this new function has entailed may perhaps be gauged from reference to Table III., which summarizes the amounts of each product distributed during 1941 by the Vancouver laboratories to the Greater Vancouver Metropolitan Area and to the remainder of the Province respectively. The table indicates that sufficient material was sent out for the active immunization against diphtheria, scarlet fever, whooping-cough, or typhoid-paratyphoid fevers of over 40,000 persons; that material for testing the susceptibility of nearly 8,000 persons to diphtheria or scarlet fever, and for passive protection of nearly 800 persons exposed to the risk of diphtheria, scarlet fever, or tetanus was also distributed; and that over 7,000,000 units of diphtheria, scarlet fever, and perfringens (gas gangrene) antitoxins, along with nearly 200 doses of anti-meningococcus serum, were made available for treatment. Or, otherwise put, the laboratories released 14,263 packages of various products during the year.

The totals given in Table III. indicate that, somewhat contrary to expectations, the biologicals requisitioned for the Greater Vancouver area are far less in proportion to population than those used in the Province at large. They also show a satisfactory tendency for more extensive use of scarlet fever toxin and pertussis vaccine. Our records list, under physicians' names, the amounts of biologicals requisitioned. Dr. J. M. Hershey, full-time Director of the Okanagan Health Unit, easily heads the list of prolific dispersers of specific immunization, and his community should be grateful to him for the benefits derived from his persuasiveness.

The location and responsibility for release of rattlesnake anti-serum (anti-venin) has been a perennial problem to the Provincial Board of Health. Hitherto, several centres in the "rattlesnake belt" of the Interior of the Province, had urged their importance as depots for the storage of anti-venin. The result was unnecessary expense, through unused packages becoming outdated, while some abuses occurred through the product being occasionally used for treatment of dogs. By arrangement with the Provincial Health Officer, it was decided that only two depots for anti-venin should be maintained, one at the Kamloops branch laboratory, in charge of Dr. A. G. Naismith, and the other at the Kelowna branch laboratory, in charge of Dr. J. M. Hershey. Two treatment doses were to be maintained at each of these two centres. This arrangement conforms with our general policy of encouraging branch laboratories to act as depots and centres of distribution for biologicals; while Kamloops and Kelowna appear to be within sufficiently easy reach of other centres in the rattlesnake belt to ensure a reasonable degree of protection.

Table I. indicates that 275 doses of measles anti-serum from human convalescents were distributed during the year. Almost all this amount was requisitioned during the first two or three months of the year, at which time Miss Malcolm, Chief Bacteriologist, who was in charge of the separation, bottling, and sterility testing of the serum, was hard pressed to keep up with the demand. Supplies of suitable blood turned up rather erratically, despite the efforts made by Dr. Kitching, of the Metropolitan Health Committee, to satisfy our needs; frequent difficulties resulted from fine-clotting tendencies exhibited by the product; and there was constant anxiety respecting sterility, since the processing had to take place in a small room in which numerous types of bacteriological examinations were carried out, and which was in every way unsuited for the preparation of a serum for human administration. Only the extremely favourable results obtained with the serum in modifying or preventing measles persuaded us to continue its preparation. Faced with this dilemma, we urged Dr. R. D. Defries, Director of Connaught Laboratories, to make available for purchase by the Provincial Board of Health the supplies of convalescent adult human serum which the laboratories were known to be accumulating; and towards the end of the year it appeared that our biological-manufacturing problems might by this means soon be ended.

NEW ACCOMMODATION.

The most significant event of the year was the taking over by the Division of the adjacent cottage to its Hornby Street, Vancouver headquarters. This cottage, formerly occupied by the Child Guidance Clinic, Department of the Provincial Secretary, represented to us a poor substitute for the Institute of Preventive Medicine whose construction at the University was so narrowly forestalled by the outbreak of war. That construction of this fine building was then postponed, rather than accelerated, must be regarded as one of the many tragic errors of judgment which beset us in war-time, bringing in their train numerous unhappy repercussions. But by early 1941 our needs for more space were such that we had to press for transfer to the Division of the adjacent building, a frame structure, smaller, but somewhat less dilapidated than the two other cottages. The urgency of the situation was increased by the notification we had received from the Connaught Laboratories in Toronto, and from the British Columbia Division of the Canadian Red Cross Society, that as soon as possible arrangements should be made in Vancouver for collection of blood plasma from human donors. It was clear that the laboratory aspects of this work, which would be extensive and complicated, could only be properly performed by the main laboratories in Vancouver; and it was equally evident that this responsibility could not possibly be assumed without additional quarters.

Little would be gained by detailing the many exasperating delays which ensued, but finally the main difficulty, of providing the Child Guidance Clinic with suitable alternative accommodation, was solved. The conversion of the cottage into laboratories and its connection with the other building by corridor was completed early in November. There followed a redistribution of the staff, affecting almost every member. Miss Helmer and Miss McDiarmid, who had both been carrying out the complex culturing tasks, already alluded to, in what must once have been small dressing-rooms, were moved into larger laboratories, the former being assigned quarters in the "new" building. Miss J. McKellar was moved from the Kahn testing laboratory into a room in the new building, where she carries out the microscopic examinations of smears for *M. tuberculosis* and the Widal agglutination tests. Miss F. T. Jamieson was also given a room in the new building, where her main duties are to examine smears microscopically for gonococci, the space she formerly occupied adjacent to the Kahn testing department being taken over by the latter. Miss Malcolm likewise moved into the new

building, where, as the senior member of staff in those quarters, she acts in a general supervisory capacity. Various other minor changes in location of staff occurred, but enough has been said to indicate that the acquisition of this additional space has improved the working conditions. There are, of course, still serious discomforts and deficiencies in our accommodation, and all that has ever been said about the general unsuitability of the present buildings as public-health laboratories is truer than ever to-day, as will later be emphasized.

RED CROSS BLOOD DONOR CLINIC.

The first Blood Donor Clinic was held in Vancouver on November 12th. For some weeks prior to the start several members of the laboratories' staff had been giving part of their time to the task of assembling and sterilizing the outfits supplied by the Canadian Red Cross Society. The storage of the necessary equipment to cope with 100 donors weekly (the initial turnover assigned to Vancouver) represented in itself a formidable problem, since it began arriving long before the extra cottage was taken over; and to negotiate our many corridors during that period was like running an obstacle race over a rabbit-warren course. When the new space became available a suite of three small rooms was assigned to the Red Cross work. One room was used for storage of the special outfits and glassware; one for cleaning, sterilizing, and assembling; while the smallest room was fitted with special mercury vapour lamps for sterilization of the air by ultra-violet irradiation. This room is kept sealed when not in use for separation of the serum specimens from the clots, or for the pooling of the sera. It is a great tribute both to the skill of the technicians handling the specimens and to the bactericidal efficiency of the special lamps in the room, that to date not one specimen among the many hundreds handled has become contaminated.

The staff of the laboratories could not, of course, have possibly coped with all the laboratory aspects of the work of the clinic; and the Red Cross Society, on recommendation of the Director of the Division, appointed a full-time technician on salary. Miss J. MacLeod received this appointment and has given most satisfactory service. Although her ultimate responsibility was to the Director, she was placed under the immediate supervision of Miss M. Malcolm, who has given unstintingly of her time to promote this important work. Indeed, practically every member of the staff has had some part to play in connection with these blood donations. The glassware cleaners and the office staff have done their share; the Kahn testing department has sought evidence of syphilis in the serum specimens before they are pooled (and, incidentally, at the year-end had failed to find a single positive Kahn reaction among 527 donations received); while two male and one female member of the staff contributed their quota of blood to the pooled lots forwarded to Connaught Laboratories in Toronto for the drying process. The Director, and Miss Kerr, Assistant Director, took part in a feature broadcast presented by the Canadian Broadcasting Corporation in which a pint of blood was taken by the former in the radio studio from a well-known announcer, in order to illustrate the trivial nature of the operation, and the lack of ill-effects upon the donor. Very favourable comments were heard. Again, most of the staff have volunteered their services for occasional evenings at the laboratories on clinic nights, when certain important procedures must be carried out immediately on the specimens sent up from the clinic. At the outset of this undertaking very late hours were kept; but later, when stream-lined methods were introduced, the fifty blood specimens were treated and the outfits disassembled and cleaned with great dispatch. Regular volunteer help was given from outside the laboratories' staff by Mrs. M. J. Lunson, who had previously had laboratory experience. If the turnover at the clinic doubles (a development foreshadowed from the beginning), additional volunteer assistance of this type may have to be sought.

GENERAL COMMENTS.

The staff numbered twenty-two and was comprised of a Director, Assistant Director, and Chief Bacteriologist; three Bacteriologists, one Serologist, and five Technicians; two media-makers, four office staff; three cleaners, and one night-watchman.

In September, Miss H. W. Gray, B.A., who had been with us for three years as Bacteriological Technician, and Miss E. J. Malcolm, our Record Clerk for nearly ten years, resigned on account of marriage. The former was replaced by Miss E. Hooley, B.A., and the latter by Miss P. McDaniel.

During the year the Director addressed several scientific and lay groups, including the Victoria Medical Society, on "The Health of the Nation"; a conference of public-health workers, held in Victoria, on "The Place of the Laboratory in the Public Health Programme"; a public meeting, held in Vancouver under the auspices of the British Columbia Medical Association, on "What Do We Mean by Public Health?"; the Health Bureau of the Vancouver Board of Trade on "Public Health"; and numerous meetings on topics connected with Blood Banks, and the Red Cross Blood Donor Clinic. He also attended the annual meeting of the Laboratory Section of the Canadian Public Health Association, held at Toronto in December, where he was chairman of the meeting, gave the chairman's address on "The Changing Place of the Laboratory in Public Health," and presented a paper entitled "Staphylococcal Food Poisoning from Buttermilk Contaminated with Staphylococci from Udder of Healthy Cow" (Dolman, C. E., Kerr, D. E., and Enman, V.).

The following publications by members of the staff of the Division appeared during the year:—

- (1.) "The Present Status of Milk-borne Disease Hazards." Dolman, C. E. *Canadian Public Health Journal*, 1941, 32, 41.
- (2.) "A New Phage and a Susceptible W. Form of *S. typhi* Isolated from a Typhoid Fever Case." Dolman, C. E.; Kerr, D.E., and Helmer, D.E. *Canadian Public Health Journal*, 1941, 32, 113.
- (3.) "The Health of the Nation." Dolman, C. E. *Canadian Public Health Journal*, 1941, 32, 387.
- (4.) "What Do We Mean By Public Health?" Dolman, C. E. *Provincial Board of Health Bulletin*, 1941, 11, 229.

The foregoing pages of this report present abundant evidence of the fact that the work of the Division, and especially of the main laboratories, increased during the year to a degree which is by no means fully apparent from the comparatively slight addition in total numbers of tests performed. The coming year will certainly bring even greater demands, which as individuals we shall be prepared and glad to meet. Our great regret is that our accommodation, while somewhat more nearly adequate in amount, is still lacking in several important particulars that would have permitted us to render more efficient and extensive services, under conditions representing a due measure of the amenities of accommodation to which highly skilled public-health workers are surely entitled. It seems deplorable, for instance, that the headquarters of the Division should still lack both a library and a suitable rest-room for the eighteen women members of staff; and that two of the three cottages should have no central heating, but must depend upon gas fires. The uneven temperatures resulting from this are not only unhealthy for the workers but interfere seriously with certain types of work, notably the Kahn tests. The space available for experimental animals is also lamentably inadequate, a fact which exposed us to special inconveniences during the year. All local sources of guinea-pigs appeared to harbour a Pasteurellosis infection, and we had to arrange with the Laboratory of Hygiene, Department of Pensions and National Health, to ship guinea-pigs to us each month, first from Kamloops and later from Ottawa.

More spacious animal quarters would have permitted us to build up our own guinea-pig colony.

But it is the general location and construction of the buildings which gives us particular concern. They have always represented a fire-hazard of the worst degree. Such measures as common sense and the limitations of circumstance dictate will be taken in case of danger of destruction of the laboratories from enemy action. But it is hard to imagine these buildings surviving the penetration of an incendiary bomb, or the blast of a demolition bomb aimed at any of the objectives within a few hundred yards' radius. If either of these contingencies should arise, the dependence of the community upon the work of the laboratories, and the folly of having postponed construction of more suitable quarters, would perhaps be brought home in full force.

In concluding, reference should be made to the happy and mutually helpful relationships which have obtained between the staff of the Division and the staffs of the Department of Bacteriology and Preventive Medicine and of Connaught Laboratories. We have also appreciated the cordial co-operation received from the Provincial Health Officer and his staff in Victoria, from the staffs of the other Divisions of the Provincial Board of Health, and from the staff of the Metropolitan Health Committee of Greater Vancouver. Friendly relations were also maintained with members of the medical profession, who seemed on the whole increasingly aware of the value of our work to them, and to the community they and we alike serve. I wish to express my personal appreciation to the staff of the Division, including the branch laboratories, for most creditable work during a trying year. Finally, it is my pleasure to record my particular indebtedness to the Assistant Director, Miss Kerr, for her selfless energy, good sense, and efficiency.

TABLE I.—STATISTICAL REPORT OF EXAMINATIONS DONE DURING THE YEAR 1941.

Examination.	Out of Town.	City.	Total in 1941.	Total in 1940.
Animal inoculation.....	49	204	253	266
Blood agglutinations—				
<i>B. typhosus</i> —				
Flagellar "H" antigen.....	286	1,584	1,870	1,597
Somatic "O" antigen.....	286	1,584	1,870	1,597
<i>B. paratyphosus</i> (A).....	299	1,584	1,883	1,595
<i>B. paratyphosus</i> (B).....	286	1,584	1,870	1,597
<i>B. dysenterix</i> (Shigæ).....	2	30	32	62
<i>B. dysenterix</i> (Flexner).....	2	30	32	62
<i>B. dysenterix</i> (Sonne).....	2	37	39	62
<i>Br. abortus</i>	291	1,594	1,885	1,609
Miscellaneous.....	9	5	14	5
Cultures—				
<i>B. tuberculosis</i>	86	299	385	337
Typhoid group.....	411	744	1,155	843
<i>B. pertussis</i> plates.....	1	37	38	58
<i>C. diphtherix</i>	260	3,103	3,363	6,859
Hæmolytic staphylococci.....	321	2,744	3,065	1,707
Hæmolytic streptococci.....	321	2,744	3,065	1,707
Gonococcus.....	347	3,272	3,619	3,545
Miscellaneous.....	103	419	522	234
Direct microscopic examination for—				
Gonococcus.....	1,315	16,497	17,812	18,339
<i>M. tuberculosis</i> (sputum).....	1,230	6,066	7,296	6,591
<i>M. tuberculosis</i> (spinal fluid).....	11	2	13	11
<i>M. tuberculosis</i> (urine).....	34	90	124	169
<i>M. tuberculosis</i> (pleural fluid).....	17	14	31	30
<i>M. tuberculosis</i> (miscellaneous).....	50	240	290	109
<i>Treponema pallidum</i> (dark-field).....	14	166	180	152
<i>Treponema pallidum</i> (nigrosine).....	-----	2	2	3
Vincent's spirillum.....	16	330	346	269
Tricophyton (ringworm).....	-----	86	86	49
Helminths (parasites).....	12	59	71	92
Serological tests for syphilis—				
Blood—				
Kahn.....	6,290	38,739	45,029	43,840
Hinton.....	2,633	9,332	11,965	13,530
Kline.....	1,517	4,889	6,406	5,710
Cerebrospinal fluid (Kahn).....	345	1,576	1,921	1,823
Spinal fluid—				
Routine.....	316	977	1,293	1,194
Colloidal reaction.....	334	1,531	1,865	1,825
Milk—				
Bacterial counts.....	311	1,678	1,989	1,849
Coli-aerogenes.....	311	1,686	1,997	1,858
Brucella agglutinins.....	-----	311	311	-----
Water—				
Total bacterial counts.....	63	774	837	1,690
Coli-aerogenes.....	1,071	772	1,843	625
Differential counts.....	-----	658	658	625
Special examinations.....	70	235	305	488
Miscellaneous tests.....	118	230	348	178
Antigen distributed—				
Kahn.....	24	-----	24	22
Hinton.....	3	-----	3	3
Bacterial.....	-----	-----	-----	27
Convalescent serum distributed—				
Measles.....	81	194	275	99
Totals.....	19,548	108,732	128,280	124,942

TABLE II.—NUMBERS OF TESTS PERFORMED BY BRANCH LABORATORIES IN 1941.

Type of Test.	Kamloops.	Kelowna.	Nanaimo.	Nelson.	Prince Rupert.	Victoria.	Totals, 1941.	Totals, 1940.
Animal inoculations	45	204	480	133	33	325	1,220	6
Blood agglutination tests								6,794
Milk samples—								
Bacteriological examinations	61	4	80	97	61	1,001	1,304	1,148
Chemical examinations		1,448		38			1,486	
Water samples—								
Bacteriological examinations	100	750	77	160	195	158	1,440	972
Cultures—								
Gonococcus						2,077	2,077	1,587
Typhoid	27	86		3		376	492	181
Diphtheria	43	1	77	10	122	15	268	406
Haemolytic staphylococci		6					6	
Haemolytic streptococci		55		111		713	879	
Miscellaneous culture		20	17	38	5		80	1,263
Direct microscopic examinations for—								
Gonococcus	330	62	514	265	432	2,555	4,158	4,855
M. tuberculosis bacillus	560	87	704	513	376	4,403	6,643	7,091
Vincent's angina	45	1	12	4	213		275	62
Kahn and Hinton tests for syphilis	1,774	529	2,191	1,292	926	10,411	17,123	14,156
Spinal fluid—								
Kahn	69	5	93	5		503	675	117
Routine		19	197	36			252	202
Colloidal		7	84				91	57
Other miscellaneous tests	56	94	112	3	19		284	624
Totals, 1941	3,110	3,378	4,638	2,708	2,382	22,537	38,753	
Totals, 1940	3,844	2,424	3,347	2,717	1,329	23,067		39,521*

* This total includes 2,793 tests from the Branch Laboratory at Trail, which discontinued its public-health laboratory services as from September 1st, 1940.

TABLE III.—SUMMARY OF BIOLOGICAL PRODUCTS DISTRIBUTED FREE BY THE PROVINCIAL BOARD OF HEALTH THROUGH THE DIVISION OF LABORATORIES, 1941.

	Greater Vancouver Metropolitan Health Area.*	Remainder of Province.	Total.
Products for active immunization—			
Smallpox vaccine.....	7,325	9,762	17,087
Diphtheria toxoid.....	5,500	7,825	13,325
Scarlet fever toxin.....	274	3,881	4,155
Pertussis vaccine.....	1,398	1,708	3,106
T.A.B. vaccine.....	335	3,074	3,409
Totals.....	14,832	26,250	41,082
Products for testing susceptibility (single test doses distributed) —			
Schick test material.....	1,270	2,700	3,970
Dick test material.....	300	3,545	3,845
Totals.....	1,570	6,245	7,815
Products for passive prophylaxis (single prophylactic doses distributed) —			
Diphtheria antitoxin.....	6	151	157
Scarlet fever antitoxin.....	12	280	292
Tetanus antitoxin.....	259	58	317
Totals.....	277	489	766
Antitoxins for treatment (total antitoxic units distributed) —			
Diphtheria antitoxin.....	80,000	4,695,000	4,775,000
Scarlet fever antitoxin.....	36,000	1,494,000	1,530,000
Perfringens (gas gangrene antitoxin).....	10,000	710,000	720,000
Totals†.....	126,000	6,899,000	7,025,000

* Since February 1st, 1941, only.

† In addition, 178 20-cc. packages of anti-meningococcus serum were distributed to the Province at large.

SUMMARY REPORT OF THE DIVISION OF VENEREAL DISEASE CONTROL.

DONALD H. WILLIAMS, M.D., DIRECTOR.

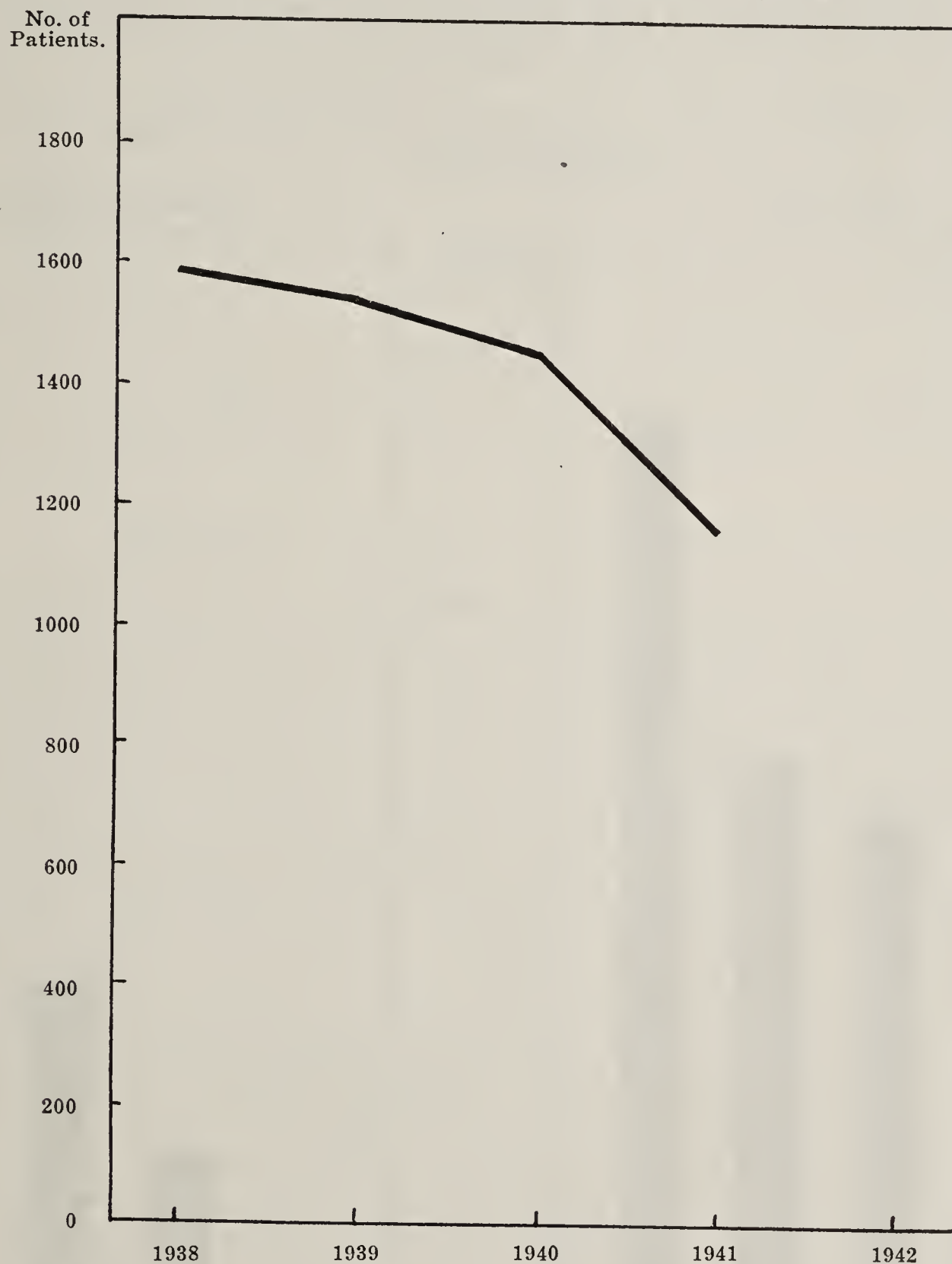
INTRODUCTION.

Upon no service of Government does there fall a greater responsibility than upon that of the Division of Venereal Disease Control. The Division is entrusted by the citizens of British Columbia with the direction of the strategy against those insidious enemies of the public health—syphilis and gonorrhœa. Each year the progress and effect of the strategy is reviewed and a report made thereupon for the people of the Province. In 1941, the fourth year since the consolidation of the varied elements of the Division's offensive, there were clearly defined victories on most fronts and established annual trends continued to indicate increasing success in the grand strategy of the battle.

That the battle is a gigantic one is portrayed by the invasion of syphilis into the lives of 4,997 of our fellow-citizens in the past four years, and gonorrhœa into 5,853. In the short period of four years, to more than 10,000 persons in British Columbia venereal disease has been a serious hazard to health. The invasion has not only been stemmed; the tide of battle has each year since 1938 shown a steady favourable forward movement. During 1941 the new notifications of syphilis were 992, a striking reduction of 52 per cent. in four years. For gonorrhœa, a large volume of which are not reported to the Division and for which the figures are, therefore, not entirely a correct index of the true state of affairs, a new low figure of 1,387 was reached, representing a reduction in four years of 20 per cent. This gratifying progress is

reflected in the number of citizens receiving care for venereal disease in public clinics. It is portrayed graphically in Fig. 1.

THE TOTAL ACTIVE VENEREAL DISEASE CASE-LOAD FOR ALL CLINICS OF THE DIVISION AS AT THE END OF EACH YEAR, 1938-41.



Year.	Number of Cases.
1938	1583
1939	1563
1940	1495
1941	1168

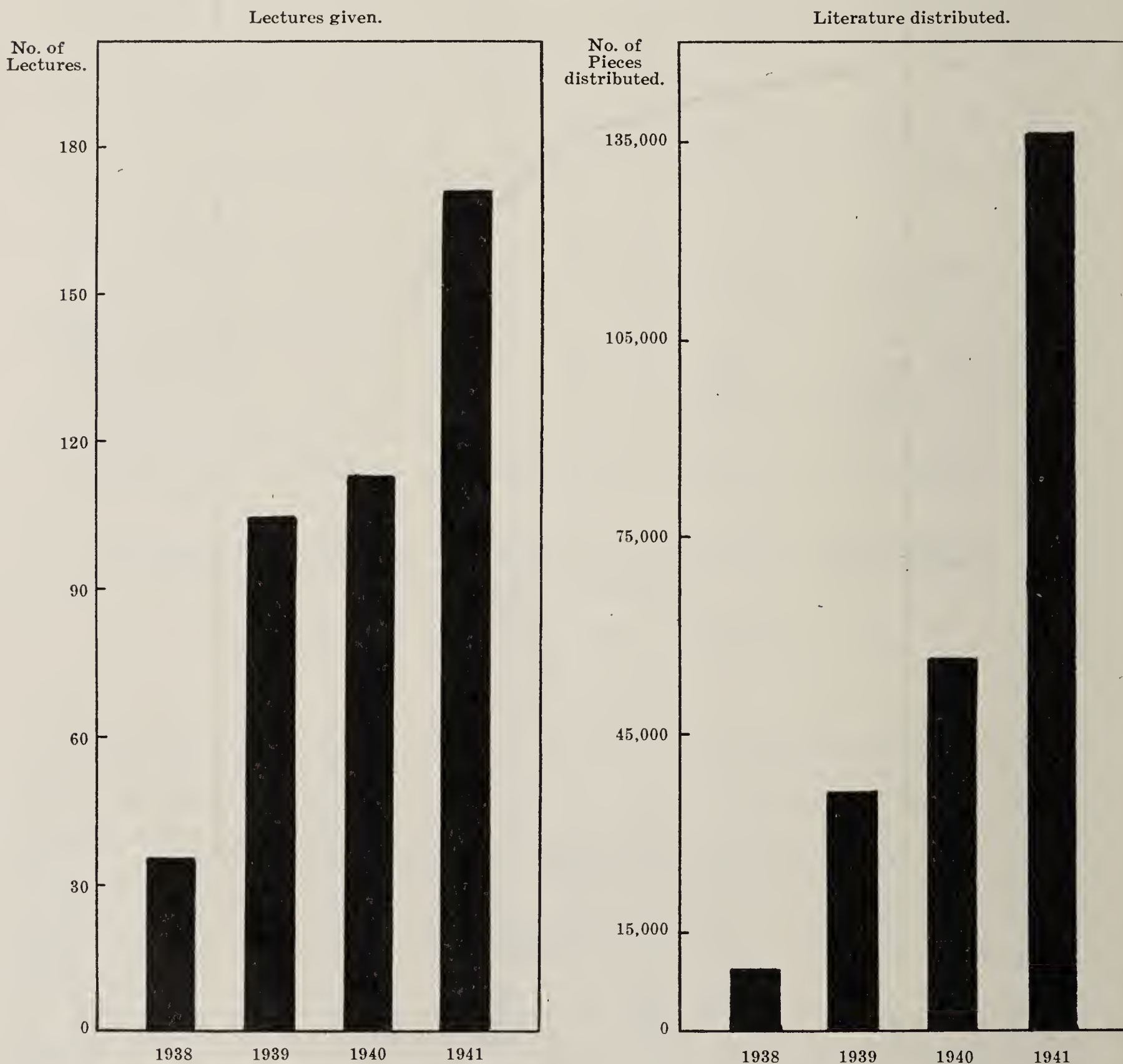
Fig. 1.

The continuing favourable trend in the face of a state of war during the past two years, when ordinarily the opposite unfavourable trend could reasonably be expected, gives added significance to the precipitous drop in the number of patients attending Government clinics. There is no indication that this reduction represented a shift of persons to the care of private physicians coincident with improved economic conditions. In the past four years among physicians there has been a similar reduction, though to a lesser degree.

PUBLIC EDUCATION.

The weapon of public information still remains the most effective field-piece in the struggle against venereal disease. Lack of public knowledge has been largely responsible for the inroads made by syphilis and gonorrhœa in British Columbia. Public enlightenment continued in 1941 to receive major attention from the Division. This Province still is the only one in the Dominion of Canada to use the air-waves for

GROWTH OF THE EDUCATION PROGRAMME OF THE DIVISION OF VENEREAL DISEASE CONTROL, 1938-41.



Year.	Number of Lectures given.	Pieces of Literature distributed.
1938	34	8,385
1939	105	35,834
1940	111	56,835
1941	171	135,288

Fig. 2.

dissemination of knowledge to its citizens. During the year five broadcasts were given over radio stations in the Province. The new sound motion picture depicting British Columbia Government facilities for the control of venereal disease was widely acclaimed by health education authorities elsewhere in Canada and the United States of America. It reached a large audience of British Columbia citizens. A trial industrial educational programme reaching 15,000 men in primary industries was, according to reports from employers, employees, and first-aid attendants, an outstanding success. It is the basis upon which a much larger effort will be carried out next year. The extent and increased momentum of the educational programme for the year may be best judged from Fig. 2, showing the number of pieces of educational literature distributed and the number of lectures given annually since 1938. The quantity of literature distributed for 1941 greatly exceeded the total for the preceding three years. During the year, 171 lectures were given, most of them to selected audiences. This represented an increase of 54 per cent. over the previous year. Special community-wide programmes were instituted in Victoria and Prince Rupert to meet the defiant challenge of the disease-dispensing bawdy-houses in these localities. Educational facilities, including literature, moving pictures, and slides, were made available to members of the three Services in the Province.

COMMUNITY SOURCES OF VENEREAL DISEASE.

With the improved reporting of new venereal disease infections and with better information regarding the sources of these infections the location of community foci of gonorrhœa and syphilis was clearly established and their camouflage largely recognized. Certain beer-parlours, particularly in the City of Vancouver, constituted a serious menace to civilian and military health. With a few exceptions, the co-operative effort by the British Columbia Hotels Association has almost entirely failed in the past two years to cope with this hazard. It has become obvious that the responsibility lies solely with the management of the beer-parlours concerned. If individual management cannot remove the menace of soliciting diseased prostitutes in their establishment then strict, effective, physical means of segregation of sexes in all beer-parlours would.

Bawdy-houses illegally operating and still spreading syphilis and gonorrhœa continue in certain areas to pollute our Provincial health. During 1941, areas under the jurisdiction of the British Columbia Provincial Police effectively dealt with this problem. The City of Victoria continued to be a notable exception to other communities. In this location where bawdy-houses constituted a particularly serious, potential threat to the health and efficiency of the Navy, Army, and Air Force, law enforcement seemed unable to cope with the situation. The Cities of Trail and Nelson continued to tolerate well-known community disease-dispensaries. In Vancouver a residual group of "madame owners" provided centres for the commercialized exploitation of diseased young women. The only effective deterrent against the continued spreading of syphilis and gonorrhœa from the "homes" of these "madame owners" is by third-conviction mandatory gaol sentences, as provided for in the Criminal Code of Canada, section 229, subsection (4). A few gaol sentences for third convictions in 1941 in Victoria, Vancouver, Nanaimo, Nelson, and Trail would have broken the back of the disease-dispensing activities of commercialized prostitution in the Province of British Columbia.

The provision of detailed information regarding the sources of all new infections in the Forces enabled the Division to reach a group of infected, promiscuous women who ordinarily would not come under the attention of the department. On the whole this group, essentially non-prostitute in type, were co-operative from the standpoint of treatment and further personal conduct.

The liaison with the Vancouver City Police Department, whereby voluntary examination of women charged under sections 228, 229, and Vagrancy I. continued to serve as a valuable means of finding infections among a highly promiscuous group of women. It is of interest to note a considerable reduction in the incidence of infection among this group during 1941 as compared with 1938. The amount of venereal disease among them is still great and continues as a serious threat to the public health.

Increased emphasis was placed upon the study of the sources of new infections where a commercialized basis existed. A detailed investigation was carried out of the means whereby the infected person was facilitated in reaching the source of his disease. This involved arousing a consciousness of third parties who wittingly or unwittingly participated, directly or indirectly, in the spreading of venereal disease. Included among these were certain "friends," beer-parlours, hotels, dance-halls, rooming-houses, property owners, real-estate companies, taxicabs, etc. When the matter was drawn to the attention of the persons involved, a desire to assist the Board of Health was the usual reaction.

MEDICAL SERVICES.

Through the provision of clinic services in the urban areas and by means of a free consultative and free medication service through their private physicians in rural sections, most infected citizens in British Columbia during 1941 were able to receive adequate treatment. The doors of the clinics opened 42,864 times to admit citizens for attention. Large quantities of arsenicals and bismuth continued to be sent to private physicians. These were essentially the same in annual quantity as for the past two years and amounted to 10,955 ampoules of arsenical and 22,566 cc.'s of bismuth. The sulphonamides showed a sharp rise from 336,825 grains in 1939 to 469,998 grains in 1941.

Consultative service continued to assist private physicians in difficult diagnostic and therapeutic problems. In the past five years 5,939 consultations were sent to physicians. Of these, 1,230 were provided during 1941. The Dominion Government again assisted with its annual grant for arsenicals to the extent of \$3,130.60.

NATIONAL DEFENCE.

The Division of Venereal Disease Control, conscious of its essential place in the national defence effort, continued its task of minimizing the potential danger of civilian sources of venereal disease to members of His Majesty's Forces stationed in British Columbia. It is gratifying to report that the efforts of the Division have been fairly successful and have thereby contributed to a more effective war effort. "Eternal vigilance is the price," however, and the Division has found itself continuously confronted with new civilian problems which menaced the health of the men in the Services. The excellent liaison between the Navy, Army, and Air Force was a source of great pleasure to the Division. Among the services provided by the Department were those of civilian source-finding, medication, technical diagnostic procedures, consultation, and educational materials.

TEACHING AND RESEARCH.

Important functions of the Division are those of teaching and research. Particular attention was given to the teaching of nurses from the University of British Columbia and from the two large schools of nursing in Vancouver. The nursing schools outside Vancouver were reached by specially prepared printed lectures. Social workers from the University of British Columbia received didactic instruction and practical field-work during the year. Investigative work was restricted essentially to clinical and

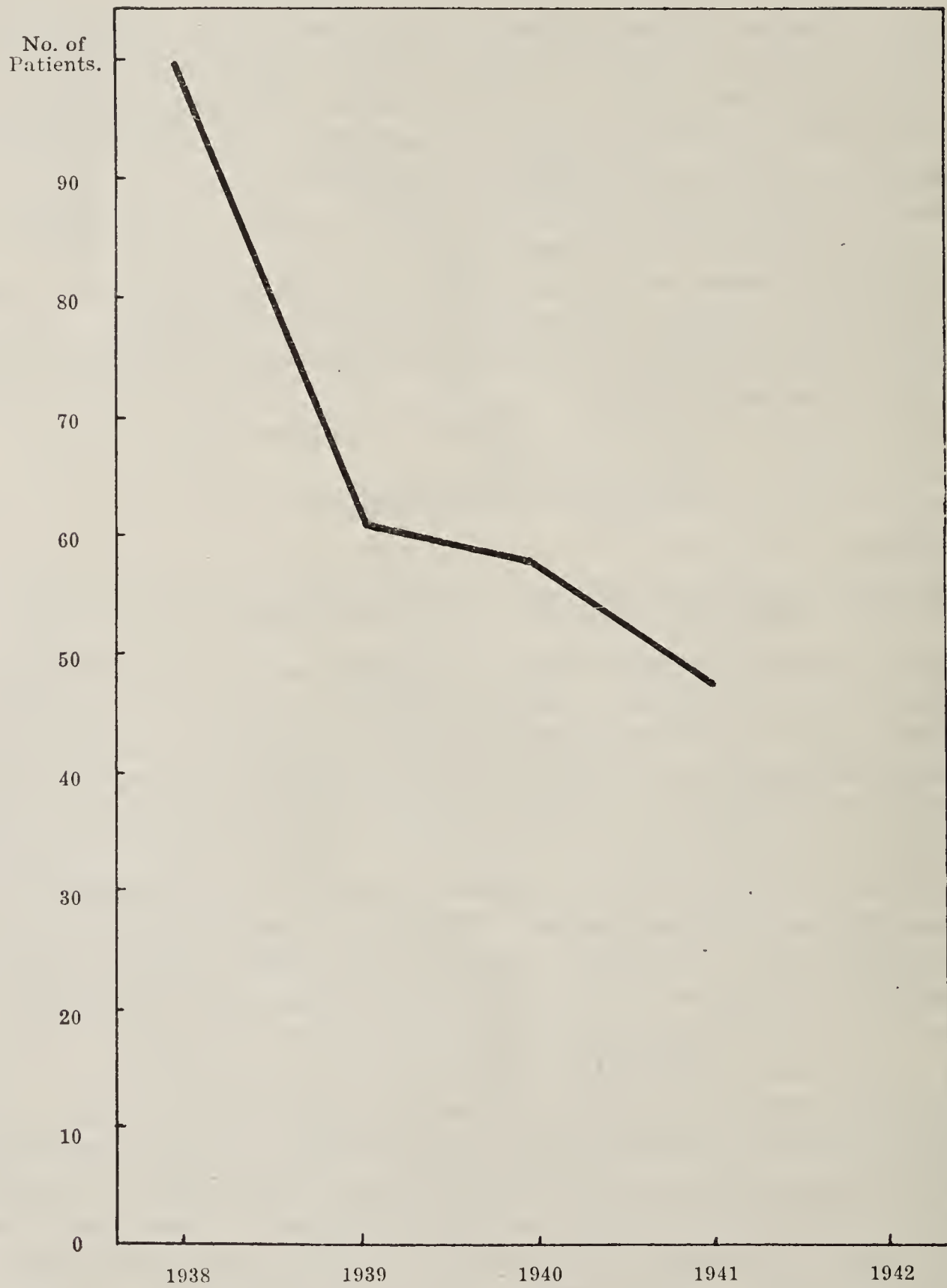
statistical studies from material available at the Vancouver Clinic. The following are the titles of presentations made during the year, which were published in appropriate journals:—

- The Suppression of Commercialized Prostitution in the City of Vancouver. Donald H. Williams, M.D. *Journal of Social Hygiene*.
- The Diagnosis of Asymptomatic Neurosyphilis. Donald H. Williams, M.D.; S. E. C. Turvey, M.D.; and J. A. Leroux, M.D. Presented at the Annual Meeting of the Canadian Medical Association.
- Gonorrhœa in the Female. E. N. East, M.D., and S. A. McFetridge, M.D. *Canadian Medical Association Journal*.
- Rare Ocular Reactions to Tryparsamide. S. E. C. Turvey, M.D. *American Journal of Syphilis and Gonorrhœa, the Venereal Disease*.
- Social Disease in the Family. Donald H. Williams, M.D., and Jean W. Macrae, B.A. *Canadian Welfare*.
- Planned Leisure in War Time. Donald H. Williams, M.D., and Jack K. Balcombe, B.Com. *Canadian Welfare*.
- Industry Accepts the Challenge. Donald H. Williams, M.D., and H. C. Rhodes. *Health*.

VENEREAL DISEASE CONTROL IN GREATER VANCOUVER.

Probably no area on this continent has been subjected to as intense venereal disease control as has the City of Vancouver and its immediate environs. For five years a comprehensive programme has been carried out which included almost all recognized methods of attacking the problem. Among the more important of these were adequate clinic, diagnostic, and therapeutic services; a trained staff to find sources of infection and to keep delinquent patients under treatment; a vigorous public education programme through press, radio, lectures, mail, etc.; and the suppression of illegally-operating, disease-dispensing bawdy-houses. That this "all-out" attack upon venereal disease was successful was very evident. Annual new notifications of syphilis from all reporting agencies including private physicians, clinics, and institutions in four years in Greater Vancouver have dropped from 1,141 to 537, an amazing reduction of 59 per cent. For gonorrhœa the reduction was less but very satisfactory; in 1938 the figure was 1,268 and in 1941 it was 958, representing a fall of 24 per cent. An even sounder statistical portrayal of the progress is seen in Fig. 3 of annual admissions of recently acquired primary and secondary syphilis among male patients attending the Vancouver clinic. A precipitous reduction of 53 per cent. in four years has been recorded. This index of improved civic health in Greater Vancouver carries with it much more than its obvious health benefit. Its social and economic significance to those persons and homes that have been spared the suffering and unhappiness of association with venereal disease cannot be overestimated. This striking reduction cannot be explained on a shift of male population into the Forces, nor is there evidence of a shift of this type of patient from clinic to private physicians due to improved economic conditions related to war industry.

MALE ADMISSIONS TO VANCOUVER CLINIC OF PRIMARY AND SECONDARY SYPHILIS,
SHOWING ANNUAL TOTALS, 1938-41.



Year.	Number of Cases.
1938	99
1939	60
1940	57
1941	47

Fig. 3.

THE CONTRIBUTION OF OTHERS.

The Division of Venereal Disease Control cannot "live unto itself" nor could it hope to accomplish its objective without the assistance of others. Our programme is "a part of all we have met" and our progress represents the pooled assistance and effort of many. The contributions of others during 1941 were very great. An outstanding one was that presented by the Rockefeller Foundation, whereby the Director for two months was enabled to study venereal disease control methods and administration throughout the United States and Canada. The United States Public Health Service, the American Social Hygiene Association, in many ways rendered valuable assistance. In Canada the Department of Pensions and National Health, the various Provincial Health Departments, the local health departments in British Columbia, other services of the British Columbia Government, the Greater Vancouver Health League, and many other private and public interested groups and individuals added to the success of 1941.

OUTSTANDING VISITORS.

The year 1941 brought with it the unforeseen enjoyment of visits from a number of outstanding men interested in venereal disease control. Among these were:—

Dr. W. A. McIntosh, Rockefeller Foundation, New York.

Dr. Walter Clarke, Executive Director, American Social Hygiene Association, New York.

Colonel A. P. Clark, Medical Corps Surgeon, United States War Department, Camp Lewis, Washington.

Dr. B. J. Horning, Associate Field Director, American Public Health Association, New York.

Dr. L. A. Dewey, State Epidemiologist, State of Washington.

Dr. Lee Powers, City Health Officer, City of Tacoma, Washington.

Dr. W. H. Avery, Director of Venereal Disease Control, Province of Ontario.

Commissioner of Police Holmes Eastwood, City of Tacoma, Washington.

Mr. Robert Jones, City Council, Seattle, Washington.

PROBLEMS AHEAD.

Looking back over 1941 the Division feels gratified at the progress; looking ahead to 1942 the Division is stimulated in anticipation at the survey of important problems awaiting solution. The extension of the epidemiological and educational programme to rural areas requires attention. A more satisfactory method of distributing the sulphonamides outside Vancouver is a great need. The vast army of citizens engaged in industry should be reached with the facts concerning venereal disease. The difficulties of 1941 regarding personnel will be increased in 1942. The requirement of personnel for the war effort continues to take "key" individuals from essential war service "within" the Division of Venereal Disease Control. It is hoped that Ottawa will rectify the unfortunate misuse of valuable human material. The Indians are claimed by many to constitute a serious public-health problem and to menace the white population. Whether this is true or not cannot be said. The problem should be thoroughly investigated in order to determine the facts. Certain beer-parlours and a residue of bawdy-houses still are intimately associated with spreading venereal disease. Suitable deterrent action by the Liquor Control Board and law enforcement agencies respectively in 1942 can remove these hazards to military and civilian health.

In retrospect, 1941 was marked by gratifying public-health victories on almost all fronts. Clearly defined evidence of reduced venereal disease was seen. Public recognition of the serious threat which this enemy constitutes to their health was observed. The end for which the taxpayers' money had been spent was being accomplished. Even

the unfavourable concomitant social conditions of world war had not seriously influenced the favourable trend of the Board of Health's war against venereal disease. In 1941 British Columbia's venereal disease had been dealt a staggering blow.

SUMMARY REPORT OF THE DIVISION OF TUBERCULOSIS CONTROL.

W. H. HATFIELD, M.D., DIRECTOR.

The general plan of organization throughout the Division has remained constant during the year. However, emphasis changes from time to time on various phases of the programme, due to the progress of the tuberculosis control programme and new scientific advances. War has increased the problems of the Division from two standpoints; firstly, increased cost, and secondly, loss of trained personnel to the armed forces. It has been found necessary in some phases of the work to change the type of service rendered, due to inability to replace trained personnel.

SENIOR STAFF CHANGES.

It is with regret that we report the death of Doctor Barker, who was Medical Superintendent of the Vancouver Unit of the Division. Doctor A. S. Lamb, who also has been associated with tuberculosis work for a great number of years, retired at the end of the year due to ill-health. Doctor G. F. Kincade, who was Senior Travelling Clinic Officer of the Division, has been appointed Assistant Provincial Medical Director and he will also act as Superintendent of the Vancouver Unit.

INSTITUTIONS.

The number of beds operated by the Division of Tuberculosis Control remains constant at 664 beds. The improved organization of the Central Admitting Office has allowed an improved use of these beds in the past year and, with the policy of attempting to make the number of beds fit the number of applications received for treatment, it has been found possible to admit patients almost immediately upon receipt of application. During the year there were 730 admissions, of which 591 were new cases and 139 were readmissions. The total number of hospital days was 231,953. As reported in 1940, it is still noticeable that more older people are applying for admission.

In connection with the Vancouver Unit, a detailed report has been submitted recommending certain administrative and also much-needed changes and additions to the present building.

As reported in previous years, the need continues to exist for a convalescent institution for cases not requiring active treatment. If adequate public-health regulations are put into effect this need will immediately become very apparent.

The Indian Affairs Branch have shown considerable progress in their programme during 1941. They have appointed a physician in charge of tuberculosis control amongst Indians in the Province and have opened a new hospital at Sardis. All Indians will be directly under the Indian Affairs Branch and admitted to their own institution.

It has been found necessary to curtail some of the specialist services previously available to some of the institutions, due to the inability to obtain such service. A bronchoscopic service has developed considerably during 1941, there being 124 bronchoscopies done. The average number of patients receiving pneumothorax throughout the institutions was 38.1 per cent. There were 94 thoracoplasty operations done, 94 intrapleural pneumolyses, and 59 phrenicotomies.

An A.R.P. programme was developed for the institutions on the coast.

STATIONARY AND TRAVELLING CLINICS.

All clinics have been very active during the year. Two major changes in clinic activities have taken place. The first one is due to the use of miniature radiography. After careful consideration, the Division decided to adopt the 4- by 5-inch miniature film for routine clinic use at the Vancouver Unit. This film has been found to be a most effective screening method and it is planned to expand its use during the forthcoming year. Due to the saving of time and the great reduction in cost for this method of radiography, it will be possible to extend radiographic services to a greater group of the population. The second one is due to the loss of medical personnel to the armed forces and the impossibility of replacing such trained personnel. This made it necessary to change the set-up of the Travelling Clinics. The Travelling Clinic on Vancouver Island remains the same as heretofore. On the Mainland, one full-time Travelling Clinic Officer is available and his work is largely concentrated on the cases that have already been diagnosed as tuberculous and those that have been previously screened out by other methods as problems for diagnosis. A Public Health Nurse, trained in X-ray, is conducting X-ray surveys in the outlying areas; two such survey units being available, one centred at Kamloops, the other at Nelson. New quarters were provided at the Kootenay Lake General Hospital for the Kootenay Travelling Unit.

The following table shows the comparison of the total cases examined by the Stationary and Travelling Clinics for the last five years:—

Year.	TOTAL CASES EXAMINED.			NEW CASES.			OLD CASES.		
	Total.	Stationary.	Travelling.	Total.	Stationary.	Travelling.	Total.	Stationary.	Travelling.
1937.....	27,983	18,815	9,168	15,330	8,360	6,970	12,633	10,455	2,198
1938.....	29,164	17,716	11,448	16,735	9,289	7,446	12,429	8,427	4,002
1939.....	29,257	17,519	11,738	14,318	8,146	6,172	14,939	9,373	5,506
1940.....	30,522	17,723	12,779	14,267	7,914	6,353	16,255	9,809	6,446
1941.....	30,888	18,312	12,576	15,007	8,685	6,322	15,881	9,627	6,254

CASE-FINDING.

The Division's policy continues to lay stress on the necessity of case-finding, and every attempt has been made to bring to light all cases of tuberculosis. At the end of 1941, the ratio of known cases to deaths was 15.1.

As previously reported, the Division's opinion is that tuberculin testing amongst the population is valuable in establishing an incidence of infection in a given community and as an educational procedure, and it is also useful in certain individual cases as a diagnostic aid. However, as a case-finding method it has not proved valuable. Consequently, repeat tuberculin tests and surveys in a given community are not now being carried out.

It is hoped that early in 1942 it may be possible to obtain an ambulatory X-ray diagnostic unit which will be equipped with its own power plant, thus allowing the use of the miniature film as a major case-finding procedure. If this is obtained it will be planned to use miniature radiography for mass survey-work, and it is expected that this may prove the greatest advance in case-finding that has been made to date.

RECORDS.

The Division of Vital Statistics has co-operated closely with the Division of Tuberculosis Control to maintain an adequate record system. A complete survey of all records was made towards the end of the year and it was planned to make many changes to facilitate the recording of all necessary information and to have this in effect early in 1942.

HEALTH EDUCATION.

Sound moving pictures still prove to be one of the most popular forms of health education. They are in constant demand and are circulated regularly throughout the Province. Considerable literature has been distributed and various exhibits have been held. During the year a Province-wide poster contest was held throughout all the schools. There was a most gratifying response to this and a great number of posters were received, showing not only artistic talent but great application of thought to the principles of tuberculosis prevention. Many lectures were given during the year to students and outside groups, and several radio broadcasts were given, not only locally but also provincially.

REHABILITATION.

Occupational therapy continues to be used in all units of the Division. The Vancouver Occupational Industries has been forced, due to war conditions, to change its policy and at the present time is devoting its major energy to occupational therapy rather than vocational training. This work has been extended further to out-patients.

DISTRICT NURSING AND SOCIAL SERVICE.

Every recognition must be made to the great part that the Public Health Nurses and social workers play in the tuberculosis-control programme. The consultant tuberculosis-control nurse reports that there are 2,863 cases directly supervised by the general field workers throughout the Province. The social service consultant now has social workers at each unit of the Division, and it is felt that medical social work has shown a distinct advance during the year.

GENERAL.

In spite of difficulties encountered as the war goes on, definite progress during the year 1941 can be reported. It is hoped that the initiation of the programme by the Indian Affairs Branch will soon be reflected in our death-rate. In order to make miniature roentgenography more widely applicable, the addition to the present equipment of stereoscopic mechanism will be necessary. It has become increasingly apparent that, in order to bring about a greater control of tuberculosis, much more stringent public-health regulations are necessary, permitting compulsory isolation of the positive sputum case.

REPORT OF THE PUBLIC HEALTH ENGINEERING DIVISION.

R. BOWERING, B.Sc. (C.E.), M.A.Sc., PUBLIC HEALTH ENGINEER AND
CHIEF SANITARY INSPECTOR.

The duties of the Public Health Engineering Division consist of sanitary supervision and control over such environmental factors as may have an effect on the public health. These include water-supplies, sewage-disposal, milk plant sanitation, shell-fish sanitation, cannery and industrial camp sanitation, investigation of sanitary complaints and public nuisances, and other miscellaneous features of environmental sanitation. Valuable assistance is received from the Division of Laboratories who do all the laboratory-work required by the Division. The British Columbia Provincial Police, whose officers are ex officio sanitary inspectors in unorganized territory, render valuable assistance in inspecting outlying camps and investigating sanitary complaints. During the past year, a series of lectures on sanitation were delivered at the British Columbia Police School, with a view toward helping the police officer to perform his sanitary duties more effectively.

For the purpose of clarity, this report will deal with each of the several items of sanitation under a separate heading.

WATER-SUPPLIES.

In British Columbia, due to the nature of the terrain and the climatic conditions, the problem of obtaining a good water-supply from most communities is relatively easy. Centres of population are located close to mountainous watersheds, making possible in most cases a gravity supply. In addition, most of these watersheds are uninhabited, making the chances of contamination of the public water-supply relatively slight. Some of our watersheds have been created health districts for watershed purposes. These are guarded in order to keep the public off the watersheds.

During the past year a good deal of information regarding our water-supplies was studied by the Division. A number of sanitary surveys of watersheds were made. In addition, a number of waterworks operators sent in samples for bacteriological examination regularly. These surveys, together with the bacteriological examinations, showed that many of our water-supplies, some of which were at one time free of contamination, are now subject to intermittent contamination, and are, therefore, of doubtful sanitary quality. In some instances, chlorination was recommended to the proper authorities. As a result, chlorinating equipment was installed at Ashcroft, Kamloops, and Duncan during the past year. With the advent of war on the Pacific late in the year, a circular letter was addressed to all the owners of water systems in the Province, giving them a summary of practices that have proved helpful in Britain. In addition, a portable gas chlorinator was purchased by the Division to be used in war emergency work.

During the coming year, the policy of making sanitary surveys will be continued, and the use of chlorine will be stressed as a safeguard of water-supplies against both the extra chances of pollution occasioned by the movement of military personnel over watersheds and the chances of sabotage by enemy agents.

Equipment and supplies for the treatment of water have a high priority rating, since it is realized by the Federal Government that no community can afford to have a water-borne epidemic at a time when the need for a high standard of health is essential in our war effort.

SEWAGE-DISPOSAL.

Most of our larger communities have sewerage systems. There are very few sewage treatment plants, since most of our large communities are located near large bodies of water where sewage can be disposed of by dilution. There are several sewage treatment plants in the Interior, some of which are greatly overloaded. In one instance, where a plant was designed with a liberal allowance for normal population growth, the installation of a military camp has loaded the treatment plant to capacity. This illustrates the necessity of using liberal design standards in building sewage-disposal plants.

During the year a number of sewerage extensions were approved in connection with military and war-time housing projects. It is felt that very little sewerage construction-work will be done for ordinary civilian use until the war is over. Some of our unsewered municipalities are already planning to build sewers after the war.

Surveys of several of our larger unorganized communities and villages show the need of finding a method of financing sewerage construction-work in unorganized territory. It is proposed that more detailed surveys of these places be made in the future, with a view to finding the amount of work required and the approximate cost of constructing the necessary sewerage-works. It is felt that with this type of information available an impetus will be given to those interested in organizing a community for

financing sewerage-work. Many of our sanitary problems are problems of financing rather than problems of engineering.

With regard to private disposal of sewage in rural areas, the septic tank and the outdoor privy are the methods commonly used. Many of these installations are not satisfactory. Plans for the construction of both sanitary septic tanks sewage-disposal systems and sanitary outdoor privies are in the course of preparation.

MILK SANITATION.

Since the inspection of dairies is a function of the Department of Agriculture, the principal function of the Division of Public Health Engineering in regard to this important phase of sanitation has been the inspection of pasteurization plants. Many of the pasteurization plants supplying milk to army units and to Provincial institutions were inspected. At the end of the year the new pasteurization plant for Tranquille Sanatorium was nearly completed, and it should be turning out a supply of pasteurized milk early in 1942.

A typhoid epidemic at Kimberley was traced to raw milk in the early part of the year. This milk was produced on a farm having a Grade A certificate. This epidemic served to illustrate the need for pasteurizing all milk sold for human consumption. In addition to this a food-poisoning epidemic at a Boy Scout Camp was traced to a raw-milk supply. Under the present "Milk Act" the powers of the Provincial Board of Health or of the local Health Department are limited to such an extent that a high standard of milk sanitation cannot be enforced.

SHELL-FISH SANITATION.

An important phase of shell-fish sanitation in this Province is that relating to the oyster industry. The oyster industry is a growing one, and since oysters which are often eaten raw may be easily contaminated, both by contamination in the water in which they grow and by faulty methods of handling, sanitary control is necessary both to protect the oyster-consuming public in the Province and the reputation of British Columbia oysters in extraprovincial markets. The Federal Government, through an agreement with the U.S. Public Health Service, has the responsibility of certifying oyster-growing areas and shucking and packing plants handling oysters for export purposes. Due to the nature of the industry, commercial oyster producers operate on foreshore leases. These leases are granted by the Provincial Department of Lands for periods now ranging up to ten years. Before a lease is granted or renewed it is customary for the application to be submitted for approval to the Provincial Health Officer. During the year negotiations have been carried on with officials of the Federal Department of Pensions and National Health and with both the Provincial and Dominion Departments of Fisheries, with a view to clarifying the amount of control which each agency has over the oyster industry and with a view to prevent overlapping, and thus ensure efficient sanitary control of the industry.

Pending the final outcome of these negotiations, sanitary surveys were made of the oyster-growing areas in Ladysmith, Crofton, and Boundary Bay. It is hoped that an effective and practical method of safeguarding the oyster industry will be worked out during the coming year.

CANNERY SANITATION.

Several of the canneries in the Vancouver and the Vancouver Island areas were inspected during the year. Several of the canneries in the outlying areas were inspected by members of the British Columbia Police Force. Several complaints were received regarding odours emanating from canneries and reduction plants in residential areas. Methods of eliminating these odours were suggested to the owners of the can-

neries involved, and it is hoped that there will be a lessening of this type of nuisance during the coming year.

The Division now has better equipment for making sanitary surveys of cannery sites, and it is proposed that a thorough sanitary survey of each cannery be made commencing in 1942. There is a need of improving the housing conditions for the Indians at the canneries. In certain instances, there is a need of improving the method of disposal of body-wastes. It is proposed that after making sanitary surveys of several of the canneries new regulations be written for fish-cannery sanitation.

INDUSTRIAL CAMP SANITATION.

A number of inspections of industrial camps were made by officers of the Provincial Police Force and reports sent to Victoria. In addition, a number of camps were visited by the Chief Sanitary Inspector. Sanitary conditions in most industrial camps of to-day are generally good.

One of the important sanitary problems in the summer months is that in connection with the hop industry. The hop-farms, mostly located in the Lower Fraser Valley near Chilliwack, require a large number of hop-pickers for about a month each season. Each hop-farm maintains camps which consist of large buildings divided into one-room suites for the accommodation of the hop-pickers. This bringing together of a large number of people, many of whom are primitive in their habits, creates a sanitary problem. The problem was accentuated this year due to heavy rains in the hop-picking season. The local Health Officers pay regular visits to these camps to see that a minimum standard of sanitation is observed. It was hoped that a thorough sanitary survey of each camp would be made during the year but, due to a delay in obtaining the proper equipment, this was not done. It is proposed that this survey be made during the coming summer and used as a basis for the making of regulations calling for minimum requirements in connection with the sanitary control and housing conditions at the hop-farms.

SANITARY COMPLAINTS.

A considerable number of sanitary complaints were received throughout the year. As many as possible of these were investigated and methods of abating the nuisances suggested. Complaints received concerning localities remote from Victoria were referred either to the Provincial Police or the local Health Officer for primary investigation. In some cases these were reinvestigated by the Chief Sanitary Inspector while making his annual inspection trip in the district.

Many of the complaints are concerned with the disposal of septic tank effluents and other filthy wastes into ditches and watercourses. In many instances these nuisances cannot be abated without expenditure of money. It is hoped that in the future some method of financing works done toward the abatement of public nuisances of this kind will be found.

CO-OPERATION WITH ARMED FORCES.

In keeping with the policy of the Provincial Board of Health to render all assistance possible to the Armed Forces, the Division has, on several occasions, assisted the military authorities in solving sanitary problems. This included inspection of pasteurization plants, water-supply sources, and consultations regarding sewage-disposal methods.

GENERAL OBSERVATIONS.

During the past year much information has been gathered on the general sanitary condition of the Province, particularly with regard to water-supplies. There still is, however, much information that is needed before our files can be considered up-to-date.

Sanitary surveys of both water systems and sewerage systems will be made during the coming year. The ultimate aim in this connection will be a record of all sanitary features so that methods of improvement can be devised and recommended to the proper authorities. With regard to shell-fish sanitation, plans for the future depend upon the arrangements that may be made with the Federal Government. With regard to milk sanitation, inspections of pasteurization plants will be made as opportunities develop, with a view to obtaining a complete file on the pasteurization plants in the Province. With regard to sanitary inspection of canneries and industrial camps, it is proposed that a long-range programme of sanitary surveys be made as a basis for formulating plans for further improvement. There are numerous other phases of sanitation which must be given further attention as time goes on, including such items as food-handling establishments, beer-parlours, tourist camps, and the environmental sanitation of schools.

Relations with other Divisions of the Provincial Board of Health have been most cordial, the Division of Laboratories being especially most co-operative in their examination of samples of milk, sewage, and water. The Provincial Police continue to render valuable assistance as in former years. There is good co-operation between this Division and the Federal Division of Public Health Engineering. The Division wishes to acknowledge with thanks the unstinted and valuable assistance rendered by members of the staff of the Provincial Board of Health.

REPORT OF THE DIRECTOR OF PUBLIC HEALTH NURSING.

MISS H. KILPATRICK, B.A., B.A.Sc., R.N.

At the close of 1940 there were in the Province thirty-two districts in which Public Health Nurses were employed. During the first month of this year two new districts were added, while later in the year two more were established. This brought the number of Public Health Nurses employed to a total of forty-eight. With the opening of the new districts and the resignation of eight Public Health Nurses through retirement and marriage, it was found necessary to obtain eleven individuals whose qualifications met with the approval of the Provincial Board of Health and who could be recommended to local authorities for appointment. Considerable difficulty was experienced in obtaining such individuals for the work and it was just possible to meet the demand, the last available qualified Public Health Nurse being absorbed in October.

The experience of the year has shown the great need for increasing the number of nurses trained in public health. Demands to meet the needs of both established and potential Public Health Services in this Province necessitate the enlistment of greater numbers of individuals suitable for and adequately equipped to take the necessary preparation for work in the field of Public Health Nursing.

The statement that a certain number of new districts were established or that a certain number of local appointments were made conveys little of the preparation involved. When a district decides to establish a service a suitable qualified Public Health Nurse must be found. This necessitates the transfer of an experienced worker to the new district, while her place must be filled by either a Public Health Nurse from yet another area or a suitable recent graduate. During the year twelve Public Health Nurses made a total of fourteen changes. In one case it was possible to arrange for a short period of experience in the specialized field under the Division of Venereal Disease Control. This proved to be very advantageous but, unfortunately, could not be repeated because it was found impossible to obtain suitable individuals to release the Public Health Nurse in her own district. However, it is hoped that at some future date when the supply of Public Health Nurses is adequate this plan of providing additional experience in specialized services may be followed. The total number of changes made

by Public Health Nurses in the thirty-six districts, with transfers, resignations, and appointments of recent graduates, was thirty-three. When it is remembered that the number of positions available is only forty-eight the extent of the turnover may be realized.

Transfers in personnel can be of great benefit not only to the work in a district but also to the efficiency of the Public Health Nurse herself. A review of the services showed that some Public Health Nurses had been in one and the same district for as long as ten years. The Public Health Nursing programme in some such areas was practically at a standstill, little or no progress had been made for some time. After some study it was decided that one solution would be to facilitate the transfer of Public Health Nurses from one area to another. The policy was set up that such transfers should be made at intervals of from two to four years, due consideration being given to the needs of and the type of district employing the Public Health Nurse, as well as to the capabilities and development of the Public Health Nurses. When it is recognized that every individual may excel in one particular type of service and that this is reflected in the service with a comparable lack of development in some other type of service, it may be seen clearly that periodic changes of workers will bring about a satisfactory balance in the programme over a period of years. The policy of encouraging the transfer of Public Health Nurses from one district to another was, therefore, initiated this year. The results have been highly satisfactory and have given in many cases a needed stimulus to the worker. The development of personnel is an essential factor to the progress in any field. The variety of experience obtained through the policy of transferring Public Health Nurses will provide facilities for such development. The need for provision of supervision for Public Health Nurses in the Province has become increasingly apparent. Some Public Health Nurses are working and have been working in areas far removed from contact with other Public Health Nurses. The authorities as well as the Public Health Nurses themselves have long recognized this need. The qualifications of a supervisor necessarily include experience in a variety of situations by a suitable worker and, following this, academic preparation for supervision. This means that opportunities for experience must be available to those capable of assuming greater responsibility. In the past the Rockefeller Foundation has generously granted opportunity for the attainment of the academic preparation, and we hope that in the future these opportunities may continue to be made available.

It is through adequate supervision of qualified Public Health Nurses that public-health nursing work may be maintained on a uniformly high level in each and every district. Consequently it is essential that provision be made for such assistance to field Public Health Nurses. The source of material for this work is from the personnel in the field but additional training for supervisory work is essential. This means that provision for training through postgraduate courses should be made available.

Working conditions in any agency are an important factor. There must be a feeling of security; a uniformity of salaries, with increases according to the merit of the worker; as well as opportunity for advancement. During the past year some progress in improving working conditions has been made. Salaries in several areas have been adjusted to conform with an established scale, with the opportunity for increment. As has already been mentioned, Public Health Nurses have been transferred from one district to another. This has been done on the basis that if the work done has been satisfactory the opportunity for a change, with resulting stimulus to the worker, has been granted. There is still much to be done, particularly to assure some feeling of security to the worker through the provision for, and financial assistance with, a pension plan. It is hoped that some arrangement for superannuation can be assured these workers within the near future. A further need is the development of facilities and opportunities for additional training for Public Health Nurses.

During the year at least one visit was made to each of thirty-two of the thirty-six districts for the purpose of supervising forty-one of the forty-eight Public Health Nurses. On these visits the work done by each Public Health Nurse is reviewed and suggestions for improvement are made. Each worker is encouraged to be critical of her own work and to form the habit of analysing it with a view to discarding procedures which have not proven to be of value. The maintenance of adequate accurate records is important and these are examined with the Public Health Nurse in each case.

A Public Health Nursing programme has many phases, some of which are planned to meet the needs of certain age-groups and others to meet the needs of the community as a whole. The objective of the Supervisor is to see not only that adequate time is being devoted to each phase but that all facilities available within the Province are being utilized to the best advantage. In this way it is hoped that a well-balanced uniform generalized Public Health Nursing Service will be carried on by each worker.

No one person can undertake to provide a health service. The co-operation of the community at large is essential. Then too, the services of the Public Health Nurses must be co-ordinated with all other health and welfare services. The participation of all, especially the lay people, is necessary so that the public health may be maintained. This is particularly true under war conditions. So it is that even greater efforts have been made throughout the year by the Public Health Nurses to carry on health education.

The Public Health Nurse must assume the responsibility of guiding the people in the local community toward the maintenance of health. For the Armed Forces this responsibility is borne by other authorities. We in this Province are responsible for health on the home front. Public-health workers are specially trained to do this work, and in spite of personnel shortages and other difficulties, the Public Health Nurses have carried on with full realization of the part they are called upon to play in these difficult times.

Shortage of personnel and the need to meet war conditions have stimulated critical analysis by the worker of the health programme. Every effort has been directed toward an adjustment of the programme to provide for adequate facilities to meet essential needs of the programme. This has, of course, meant that certain things which were considered non-essential and which previously consumed time, in some cases considerable time, have been eliminated. The objective now is the establishment of programmes which will produce the results necessary to meet the most urgent health needs of the people. The same thought is aptly expressed by Dr. Parran, Surgeon-General, U.S. Public Health Service, in his message for 1942. He comments as follows: "Important as has been the task of public-health workers in the past, it is of transcendent urgency now in the battles to defend our freedom. Not only must we hold the lines against preventable disease in the population sustaining the armed forces and producing the essentials of war, we must also translate scientific fact into positive action for three-thirds of our people in order to raise the level of strength, endurance and morale for the grim work ahead. Let us reappraise our own efforts, having the patriotism to discard from our plans whatever contributes little to national needs, and the courage to move ahead boldly where we can add to national strength."

Continuing the policy that was established last year in regard to Public Health Services, efforts were directed toward the elimination of so-called specialized services. Such services were, in some cases, limited to one age-group such as the school-age group. As a result of these efforts of seven districts in which school services alone were made available by the Public Health Nurses, at the end of the year only two such specialized services continued to provide this limited service.

In addition to the supervision of existing services, consideration was also given to areas wherein the establishment of a Public Health Nursing Service was under discus-

sion. In this Province the policy has always been that a decision in this matter is made by the local people themselves. For the purpose of giving information to local authorities as well as to the public, visits to potential Public Health Nursing districts were made in two instances. In each case these visits were made in conjunction with supervisory trips to nearby Public Health Nursing districts.

In those regions of the Province where distance is not so great that it precludes periodic contact with other Public Health Nurses, Study Groups have been established. All the Public Health Nurses within reasonable distance gather at monthly intervals to discuss problems and learn from each other. Programmes for study are set up in these groups which are organized in the Vancouver Island and the Fraser Valley areas. Public Health Nurses in the Okanagan Valley and in the Kootenays meet together at less frequent intervals.

The revision of record forms was continued through the year and considerable progress was made. In addition to meetings attended for this purpose, contributions were made to various other meetings, notably including the Advisory Committee on Nursing Service Enrolment. As a result of this a complete tabulated file of all graduate nurses, as well as those capable of making some contribution by way of nursing service in case of epidemics or disaster, has been set up and lists made for use in the various districts throughout the Province.

SUMMARY REPORT OF THE GREATER VANCOUVER METROPOLITAN HEALTH COMMITTEE.

STEWART MURRAY, M.D., D.P.H., SENIOR MEDICAL HEALTH OFFICER.

The Greater Vancouver Metropolitan Health Scheme has now completed the fifth year of operation.

The plan stands unique as a successful effort in the co-operative pooling and unified control of local Public Health Services in a Metropolitan Area. Begun as an experiment amid fear and scepticism, it is now in its sixth year of successful operation. Health Services have been rendered more efficiently and therefore economically and they have been intensified and extended; special services, equipment, and data have been made available throughout the Metropolitan Area; public-health standards have been raised; unified control has enabled the taking of prompt measures against the spread of communicable diseases; the whole tone of health administration has been improved.

The advantage of co-operation between branches of civic administration is often talked about and is generally admitted. This committee is an outstanding example of the actual and continued practice of co-operation; moreover, of co-operation between civic branches of not merely one municipality, but several municipalities.

At the conclusion of what might be termed the five-year probationary period, on October 31st, 1941, during which time the co-operating bodies were in receipt of grants from the Rockefeller Foundation and the Provincial Board of Health, the question of the future very naturally occupied the attention of the committee.

It was agreed that the experiment had fully justified the faith of those who first promoted the plan. Each of the parent bodies, of which there are ten, agreed to the continuance of the scheme, more or less in its present form. The Provincial Board of Health agreed to provide half of the last quarter of the Rockefeller grant, as they had already done with the 25-per-cent. decrease over the preceding three years; the municipalities taking up the balance. The question of a new agreement and the actual form it will take, however, is still to be considered by the committee for submission to the parent bodies. In the meantime, however, there has been no change in the operations, with which all expressed satisfaction.

DEVELOPMENTS.

A full-time school dental service has now been instituted in the Municipality of Burnaby. The whole of the Metropolitan Area is now served by this most necessary adjunct—all under the general supervision of the Director of School Dental Services.

The prenatal and postnatal letter service, which has been operated by the Provincial Board of Health, has now been taken over by the Metropolitan staff for the Area, thus assisting in rounding out the local programme.

In an effort to increase the consumption of milk, which, by means of a survey through the schools, was found to be considerably below the minimum requirements, the committee had several meetings with representatives of the dairy industry to encourage them to organize and advertise along the lines of the Milk Foundation of Toronto. The Metropolitan staff is prepared to offer advice if desired. Attention is drawn to the April, 1941, issue of the "Canadian Public Health Journal," which is a special Milk Number, containing the report above referred to on the "Consumption of Milk in Vancouver."

CONTROL OF UNDULANT FEVER.

The reported danger from Bang's disease in the dairy herds from which raw milk is drawn and sold without pasteurization was before the committee as a major problem.

REPORTING OF COMMUNICABLE DISEASE AND CANCER.

New forms have been prepared in conjunction with the Provincial Board of Health leading to better and more accurate reporting of communicable diseases and cancer. In connection with cancer, the medical profession has been contacted and especially requested to faithfully fill in the forms, which will be sent to the Provincial Board of Health, and it is anticipated that very useful and illuminating data will be accumulated to aid in the fight against this disease. This work is also in conjunction with the committee of the British Columbia Medical Association for the study of cancer.

AIR-RAID PRECAUTION.

The vulnerable situation of the Vancouver Area in the new war developments has thrown a great deal of additional work on the staff. The Senior Medical Health Officer is a member of the Civilian Protection Committee, involving much work, time, and attention. The medical staff is on call in case of emergency and has been very active in examining candidates for First-aid Certificates. The nurses and inspection staffs are also on call and all stood by during the three-day blackout in December.

GENERAL.

In general, the work of the organization is progressing very smoothly. Monthly meetings of the directors and medical staff are held, which are invaluable for the discussion of matters of policy and progress.

Meetings of supervisors are also held and staff meetings in the various Health Units, by which means it is endeavoured to assure that the policies and procedures may be uniform throughout the organization.

The standard of personnel has been well maintained, although it may become more difficult, due to the exigencies of war, to immediately fill all vacancies with permanent appointees. Three of the doctors and one nurse are now serving with the Forces, their places having been filled with temporary appointments.

The staff is constantly working for an improved programme and a number of up-to-date books by recognized authorities have been ordered for the library.

We feel that we have the organization and the ability to do a good job and that it is being well done.

TABLE SHOWING RETURN OF CASES OF NOTIFIABLE DISEASE IN THE PROVINCE OF BRITISH COLUMBIA FOR THE YEAR 1941.

Abbotsford and District	Actinomycosis.	Cancer.	Cer. Sp. Meningitis.	Chicken-pox.	Conjunctivitis.	Diphtheria.	Dysentery (all forms).	Encephalitis.	Erysipelas.	Gonorrhoea.	Influenza.	Measles.	Meningitis (Simple).	Mumps.	Ophthalmia Neonator.	Paratyphoid Fever.	Pellagra.	Pneumonia (Lobar).	Pneumonia (Broncho).	Pneumonia (unspecif.).	Poliomylitis.	Puerperal Septicaemia.	Rubella.	Scarlet Fever.	Septic Sore Throat.	Syphilis.	Tick Paralysis.	Trachoma.	Tuberculosis.	Typhoid Fever.	Undulant Fever.	Whooping-cough.	Total.
Abbotsford and District		3		44	8				1		12	488		303				6	7				70	51					1	1	2	997	
Agassiz				4	1							5											47		1							11	
Alberni			3									38									2										9	99	
Aldergrove																					1											1	
Alert Bay				43			1				7	8			1			2	3				128		5						14	213	
Alexis Creek					1						521								6				1					6				539	
Armstrong				3							20	122		8							7		327	1					1		4	493	
Ashcroft				32							2	35		1				1	1		1			2						70	146		
Atlin											69	9																				78	
Bella Bella		1		11							70					4		8	3	4			19						1			121	
Bella Coola		1		7					1		5	95										5		1								115	
Blubber Bay																																5	
Blue River												33		2																		35	
Bralorne		2		4							97	3						3					4									35	
Britannia Beach				1							14	94		1									2									113	
Burns Lake		1									6	27									2		10	1								47	
Campbell River		1									78	17							6				6								15	125	
Castlegar				35								321		61									5									422	
Ceepeece							15				5																					20	
Chase				1					1		53								1				34									91	
Chemainus				1					1			55						1					29	2								100	
Chilliwack		2		1								103		24		2			1		3		32	87					2	2	8	267	
Cloverdale																																	
Coal Creek				15					1		10	13		1									125	8	1								174
Cobble Hill				26								37											144										207
Copper Mountain											125	4											27										156
Coquitlam			1	2								27											2	1								33	
Courtenay		7	4	1	1	3			2		113	147		1				7	11	1			68	1	3							455	
Cranbrook		6	1	18	2				4		28	174		1					1	3			6	11	2				1			258	
Creston				10							6	99											135	11	1						70	344	
Cumberland				10								81											23								9	123	
Carried forward		24	9	269	13	4	16		12		1,241	2,035	1	403	2	7		28	51	8	16	5	1,249	177	14			6	3	302	5,901		

	2	1,178	138	3,160	31	23	26	6	79	1,577	2,602	15,562	3	1,735	4	9	149	199	34	54	8	8,944	692	107	972	2	36	1,351	50	22	1,264	40,019					
Zeballos																																					
Whole Province—																																					
Gonorrhoea										1,577																											
Syphilis																									972												
Tuberculosis																																					
Totals	2	1,178	138	3,160	31	23	26	6	79	1,577	2,602	15,562	3	1,735	4	9	149	199	34	54	8	8,944	692	107	972	2	36	1,351	50	22	1,264	40,019					

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